

ORDER

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GENERAL MAINTENANCE HANDBOOK FOR AIRWAY FACILITIES



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DEPARTMENT OF TRANSPORTATION **FEDERAL AVIATION ADMINISTRATION**

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RECORD OF CHANGES

DIRECTIVE NO.

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FOREWORD

This order establishes the Airway Facilities maintenance program. General administrative and management standards, procedures, and guidelines are provided for the operational maintenance of the National Airspace System (NAS) facilities and equipment.

Relative directives provide detailed guidance in the specialized areas of administrative management and technical applications. This order complements these directives and should be collocated with the Airway Facilities maintenance handbooks.



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CHAPTER 1. GENERAL

1. PURPOSE. This order provides the overall maintenance procedures and requirements essential to the administration and maintenance of the Airway Facilities program.
2. DISTRIBUTION. This order is distributed to division level in Washington headquarters except the Systems Maintenance Service, Automation, and the Associate Administrator for Airway Facilities; to branch level within the Systems Maintenance Service, Automation, and the Associate Administrator for Airway Facilities; to branch level within the regional Airway Facilities divisions; to division level within the regional Air Traffic, Flight Standards, Airports, and Logistics divisions; to section level at the FAA Logistics Center and FAA Academy at the Mike **Monroney** Aeronautical Center; to division level within the Engineering, Test, and Evaluation Service at the FAA Technical Center; and to Airway Facilities field offices having requirements for this directive.
3. CANCELLATION. Order **6000.15A**, General Maintenance Handbook for Airway Facilities, dated August 17, 1978, is canceled.
4. EXPLANATION OF CHANGES. This revision incorporates the changes promulgated by Action Notice A **6000.8**, Interim Operating Procedures. for Order **6000.15A**, General Maintenance Handbook for Airway Facilities, and includes other changes resulting from regional and headquarters comments. The revision adds new terminology and definitions and provides information on **manual and** automated reporting requirements, facility maintenance logs and procedures, and forms. Also, all appendixes have been updated to provide current maintenance philosophy.
5. TERMINOLOGY AND DEFINITIONS. Appendix 1 lists definitions that explain the various terms used by Airway Facilities maintenance personnel. These definitions apply to terms used in maintenance technical directives and may not agree with those used in some FAA reporting systems, data processing systems, etc.
6. FORMS AND REPORTS. Refer to appendix 6 for a list of FAA forms and their availability.
7. GENERAL MAINTENANCE PHILOSOPHY. The Airway Facilities maintenance program in the Federal Aviation Administration (FAA) **is** dedicated to ensuring that air traffic control, air navigation, and aeronautical communication systems of the National Airspace System (**NAS**) function continuously at acceptable levels of performance; and that maintenance of these systems and the associated environmental features are efficient, economical, and responsive to operational needs, requirements of aviation safety, and national defense.
8. MAINTENANCE. The Airway Facilities maintenance concept is preventive rather than corrective in nature. The concept recognizes that facility service availability as well as reliability and maintainability factors interact as a system of interdependent elements. Periodic maintenance is designed to minimize unanticipated service interruptions as well as extend the life cycle of the equipment. When unanticipated interruptions occur, service restoration will be accomplished by the replace-now, repair-later technique, if possible, to minimize

the duration of an interruption. Reliability and maintainability (R&M) are incorporated in the design by specification, and quality control will be practiced at every phase of life cycle from acquisition to disposal. There are three major R&M benefits to the Airway Facilities operational maintenance program:

- a. Optimum productivity and utilization of manpower.
- b. Enhanced performance, service availability, and operational efficiency of the NAS.
- c. Improved overall benefit from the system to the user at the least life-cycle cost.

9. GENERAL MAINTENANCE GUIDE. Maintenance of Airway Facilities systems, subsystems, and equipment in the NAS shall be guided by the following general principles:

- a. Availability and reliability of air traffic control, navigation, and communications services shall be provided to the maximum extent practicable, consistent with established agency policies, practices, and resources. The quantity and duration of service interruptions and outages--both planned and unplanned--shall be minimized. The timing of planned outages shall be coordinated with Air Traffic personnel.
- b. A periodic maintenance program shall be conducted to ensure maximum efficiency in system, subsystem, and equipment performance, to minimize unwanted interruption in services, and to eliminate major breakdowns. This program shall also be applicable to appropriate support items.
- c. There shall be a capability to react promptly to unanticipated interruptions and outages, as well as to potential problems, consistent with established FAA policies, practices, and resources.
- d. Uniform national standards, tolerances/limits, schedules, and procedures for maintenance shall be promoted. Waivers/national change proposals (NCP's) thereto shall be granted judiciously. Site adaptation shall be permitted, but shall not conflict with, negate, circumvent, or lessen the effectiveness of the national standards.
- e. A highly competent staff of maintenance technical personnel, numerically adequate, should be retained. This skilled staff shall be trained in the specialized needs of the FAA as necessary.
- f. The types and quantities of test equipment, tools, spare parts, etc., required by maintenance personnel to perform their technical duties will be provided consistent with FAA policies and practices and governing budgetary restrictions.
- g. Comprehensive, accurate, current, and timely maintenance technical documentation shall be provided to define and specify the duties, responsibilities, and authority granted to Airway Facilities maintenance personnel at the regional and sector levels.

h. An active feedback system shall function throughout the maintenance organization to inform the Systems Maintenance Service and other cognizant headquarters offices and services, through appropriate administrative channels, of actual or potential problems, deficiencies, errors, or suggested improvements that affect, or may affect, the agency's ability to conduct its mission in a safe and efficient manner. The feedback system includes, but is not limited to, employee suggestions, unsatisfactory condition reports, formal and informal **onsite** inspections, proposed modifications, directive improvement reports, **NAS** Change Proposals, informal letters, etc.

i. All Airway Facilities maintenance personnel shall exercise due and proper personal and equipment safety precautions, fire prevention techniques, and safe working practices in performing maintenance activities.

j. Quality work and pride in achievement shall be promoted in all maintenance activities.

k. The quality of the nation's environment and natural resources shall be protected and enhanced consistent with the maintenance mission'. Environmental pollution and inconvenience to the general public shall be avoided to the maximum extent practicable.

l. The Airway Facilities maintenance organization shall foster a cooperative working relationship with other segments of the FAA, particularly the Air Traffic and Flight Inspection Field Office organizations. A comparable liaison shall be maintained with other Government agencies, local authorities, airport managers, fixed base operators, and the general public.

10. REFERENCED DOCUMENTS. The nature of this document requires reference to numerous publications. To avoid frequent revision for the purpose of changing references to the latest issue, personnel shall consider all references to refer to the most recent edition.

11. RECOMMENDATION FOR CHANGES. **Preadressed** comment sheets are provided at the back of this order. Users are encouraged to submit recommendations for improvement.

CHAPTER 2. ADMINISTRATIVE MANAGEMENT

SECTION 1. 'TECHNICAL DOCUMENTATION

12. INTRODUCTION. A key to effective maintenance is the timely **availability of** comprehensive, accurate, and usable maintenance technical documentation. Such guidance is disseminated in the FAA in various types of documents, as described below. Airway Facilities maintenance personnel should consult local directives checklists and other publications to determine which documents are applicable to their maintenance requirements.

13. FAA DIRECTIVES. FAA directives are national, regional, and sector orders, notices, and supplements issued in accordance with Order 1320.1C, FAA Directives System. The following documents are included in this category:

- a. Maintenance technical handbooks.
- b. Electronic equipment modifications (EEM).
- c. Plant equipment modifications (PEM).
- d. Other headquarters-issued and field-issued orders, notices, and supplements.

14. DIRECTIVES CHECKLIST. A sequential listing of directives (including current, canceled, and supplemental orders and notices) is distributed periodically. It should be referenced regularly to ensure the integrity of your files.

15. SCOPE OF MAINTENANCE TECHNICAL HANDBOOKS. Maintenance technical handbooks provide system-oriented information which tie together the various units and/or components that make up a system, subsystem, or equipment. These handbooks should contain the full standards and tolerances plus all periodic maintenance requirements for all equipments within the system. This will enable the user to have critical information in one handbook instead of searching two or more sources for the full handbook maintenance standards and requirements. for a specific equipment. Maintenance technical handbooks cannot be used to insert, delete, or correct information contained in instruction books; such action is properly handled by EEM's or PEM's. Indiscriminate duplication of information contained in instruction books should be avoided.

16. LOCALLY DEVELOPED DOCUMENTATION. Regions and/or sectors may issue maintenance instructions:

- a. To supplement published guidance as necessary to meet local conditions.
- b. To fill a need prompted by the absence of appropriate published guidance.
- c. Such documentation shall not conflict with, negate, circumvent, or lessen the effectiveness of any documentation issued at a higher organizational level without written approval of that organization and shall be canceled when no longer required. Copies of all locally developed publications shall be forwarded to the

next organizational element (i.e., region, Systems Maintenance Service, etc.) not later than the time of issuance.

17. CONTRACTOR-DEVELOPED PUBLICATIONS. Contractor-developed publications are documents prepared and/or furnished by an equipment manufacturer as part of his/her contractual obligations to FAA. Except for those applicable to developmental equipment, the newer publications of this type contain an identifying publication number in anticipation of the implementation of a technical issuance directive system. This would be separate from, but compatible with, the general **FAA directives** system. This category includes instruction **books**, instruction booklets, and manufacturer's brochures.

18. TECHNICAL INSTRUCTION BOOKS. FAA Specification **FAA-D-2494/b**, Technical Instruction Book Manuscript: Electronic, Electrical, and **Mechanical Equipment**, Requirements for Preparation of Manuscript and Production of Books, is partially based on the Symbolic. Integrated Maintenance Manual (SIMM) concept of military origin. It is intended to provide the following benefits in the Airway Facilities Operational Maintenance Program:

a. Reduce the physical bulk of technical documentation, relieving technical personnel of digesting redundant material, as **well** as reducing printing and storage costs.

b. Afford quick and precise access to system, subsystem, and equipment details.

c. Increase the rate of technician comprehension of highly complex technology.

d. Facilitate troubleshooting and preventive and corrective maintenance.

e. Eliminate the necessity of preparing redundant training material on the same subject; reduce the misapplication of FAA Academy instructors and supervisory personnel into nonproductive work and redirect their total effort **and skills** toward teaching, supervising, and instructing students, using a reliable information system.

f. In some cases this type of information system will permit field technical personnel to successfully maintain FAA facilities systems, subsystems, and equipment to FAA standards with minimal training.

19. MISCELLANEOUS DOCUMENTS. The following documents are included in the miscellaneous category:

a. Military publications (e.g., Air Force technical orders).

b. Systems research and development reports.

c. Facility inspection reports.

d. Flight inspection reports.

- e. Preprinted forms.
- f. Letters and memorandums of agreement.

20. DOCUMENTATION ACCURACY. All documentation shall be accurate and adequate to meet the requirements of field personnel. Users of maintenance technical directives, instruction books, modification directives and other maintenance documents or technical directives, are requested to report any errors or conflicts and to make suggestions for improvement. Except where preaddressed comment sheets, or NCP's, are provided in a document, proposed corrections shall be forwarded through appropriate administrative channels to the regional office for evaluation and subsequent transmittal to the OPI for action.

21. ADHERENCE TO PUBLISHED REQUIREMENTS. An instruction book provides detailed descriptive, installation, operation, maintenance, and logistic information regarding a particular type of electronic or plant equipment, subsystem, or system. A maintenance technical directive provides system-oriented policy, descriptions, standards/tolerance/limits, maintenance schedules, and maintenance procedures. The information in maintenance technical directives tie together the various parts of equipment that comprise a system, may cover a single category of equipment, or may be applicable to several "generations" or categories of systems and equipment. The maintenance technical handbooks do not replace an instruction book.

a. Precedence. Airway Facilities personnel shall adhere to all documented maintenance requirements. However, where there is a conflict between the requirements published in various documents, the following guidelines shall apply to all FAA-maintained facilities, systems, subsystems, and equipment:

(1) FAA directives shall take precedence over non-FAA prepared publications (e.g., military manuals).

(2) National publications (both FAA-issued and FAA-adopted) shall take precedence over regional and sector publications.

(3) Conflicts between comparable publications shall be reported as indicated in section 2 of this chapter.

b. Deviation From Published Procedures. The maintenance procedures published in technical documentation have been selected as the most desirable for general use and shall be used for routine system, subsystem, and equipment adjustment. There may be instances in which one of these procedures is required to restore operation but needed test equipment is temporarily inoperative or unavailable at the time. A substitute procedure using available equipment may be employed for emergency restoration, provided that use of the procedure will ensure operations within tolerance. The published procedure shall be used as soon as practicable to reconfirm operation is within tolerance.

c. Deviations From Published Schedules. The regions may shorten the time interval specified in technical documentation applicable agency wide, but shall not lengthen them except by a waiver/NCP. (See Orders 6000.20B, Waiver of Criteria for Establishment and Maintenance of Airway Facilities, and 1800.8E, National Airspace System Configuration Management.)

d. Nonstandard Facilities. The standards and tolerances and adjustment procedures contained in applicable maintenance technical handbooks represent the agency requirements for all facilities of a given type. Some facilities may have been commissioned with initial tolerances and/or procedures other than those specified because agency standards were nonexistent at the time. These facilities shall adopt the prescribed procedures and/or be adjusted to the prescribed standards and tolerances to the extent practicable when resources and workload permit. The regions shall obtain a waiver (see Order 6000.20B) from the Systems Maintenance Service for the requirements that are not met by readjustment and/or revision of procedures. During the interim, those operating parameters and procedures established at facility commissioning shall be considered to be the standards for that facility. Tolerances to the parameters shall be commensurate with the tolerance established for similar parameters published in the maintenance technical handbook.

22. GUIDANCE. To fully delineate the periodic maintenance activities that are required, the Systems Maintenance Service will provide complete guidance on ALL required periodic maintenance activities in maintenance technical handbooks, supplemented by required recurring general maintenance practices and tasks as stated in paragraphs 93 and 94 of this order. One or more of the following techniques, as appropriate for the individual directives, will be employed:

a. A maintenance technical handbook will list all of the required periodic maintenance activities (except the general maintenance practices referred to in the preceding paragraph). The frequency of accomplishment of each activity will be stipulated in precise terms (i.e., weekly, quarterly, etc.) or in general terms (e-g., as required, every 3 to 4 months).

b. A maintenance technical handbook will incorporate by reference specific periodic maintenance activities contained in the equipment instruction books and prescribe the **frequency of** accomplishment of these activities. The maintenance technical directives and this order may prescribe other periodic maintenance activities to supplement those activities cited in the equipment instruction books.

23. DEVIATIONS FROM PUBLISHED REQUIREMENTS. When a region cannot comply with one or more of the requirements (such as standards and tolerances/limits, procedures, etc.) prescribed in maintenance technical handbooks or instruction books at a particular location, a request for **waiver/NCP**, including changes to items related to commissioning criteria, determinants of basic operational capabilities, or other information, shall be, submitted as soon as practicable to the Systems Maintenance Service. The request must fully describe the circumstance and contain a detailed justification for the waiver. A copy of the **waiver/NCP** request and approved **CCD** shall be filed at the site.

a. If a **waiver/NCP** is requested to a regional supplement to an agency directive for a condition within the specified provisions of the supplement, approval of the request is delegated to the regional **OPI**.

b. If the **waiver/NCP** is requested of any agency directive requirement, the regional **OPI** may disapprove, but may not approve the waiver request.

c. Headquarters level of approval is required on deviations to requirements, standards, and criteria specified in agency directives in accordance with Order 6000.20B, using FAA Form 6000-3, Airway Facilities Criteria Waiver Request.

d. NCP's affecting baseline documentation should be processed in accordance with the requirement of Order 1800.8E, National Airspace System Configuration Management, for those systems under configuration management.

24. DOCUMENTATION TIME/DATE ENTRIES. It is necessary to standardize all time/date entries on technical facility performance records and to facilitate correlation of events such as accident investigation, statistical data analysis, etc., using a common time base. Therefore, performance reports, records and other documentation (e.g., maintenance reports, records, forms) for Airway Facilities systems, subsystems, and equipment presently in the NAS or in the process of being integrated into or removed from it, that require a time-of-day entry for their completion shall use Coordinated Universal Time (UTC) and date. The entry shall show the date and identify the time in the 24-hour format (four digit) as UTC.

25. DOCUMENTATION DISTRIBUTION. Maintenance technical documentation specifying the policies, practices, duties, and responsibilities that govern the activities of field Airway Facilities personnel, must be readily available to all those who require it. Maintenance technical directives directly related to the primary mission of the facility shall be available at the site. Maintenance technical directives used in connection with the support (i.e., roads, structures, electrical systems, etc.) of a facility are not required to be filed at the site. However, they must be readily available in a central location for use by maintenance personnel when required. The location shall be designated by the first-level technical supervisor.

a. Contractor-Developed Publications. Equipment instruction books and booklets, and--to the extent practicable--manufacturer's brochures, are distributed as follows:

(1) Two copies per equipment. If preliminary instruction books accompany the equipment when shipped from a contractor, then when the final instruction books are available, two copies per equipment will be provided directly or upon requisitioning from the FAA Depot, depending on the provisions of the equipment procurement.

(2) Either one or two copies per addressee on the distribution list to the regional Airway Facilities Division, FAA Technical Center, the Aeronautical Center (FAA Academy), FAA Logistics Center, and National Engineering Field Support Division.

(3) FAA Logistics Center stock copies. Under certain circumstances (e.g. when it is known that multiples of a certain piece of equipment will be installed at one location), the distribution of the above documents may vary somewhat from that described above.

b. Electronic/Plant Equipment Modifications/Maintenance Technical Directives, and Changes to Contractor-Developed Publications. Copy requirements for field distribution are computed automatically in accordance with established criteria and are based on facilities reported in Order 6000.5B, Facilities Master

File (FMF). Facilities to which the directive applies will be retrieved from the Facilities Master File or Facilities Service Equipment Profile (FSEP) by cost center code and matched with addresses in the Airway Facilities Field Address File to produce address labels for field offices responsible for particular facilities/equipment. Administrative copies are included in the criteria used for computing copy requirements. Mailings are direct to the field office for which the labels are produced. See Order 1720.30B, Distribution of Systems Maintenance Service Technical Directives Affecting Airway Facilities.

c. Other FAA Technical Directives. Maintenance technical documentation other than those types included in the above subparagraphs are distributed directly on a "need to know" basis in accordance with Order 1720.18B, FAA System for Distribution and Stocking of Issuances.

26. FILING OF DOCUMENTATION. Maintenance documentation shall be filed as discussed in chapter 13 of Order 1320.1C in such locations as necessary in order to ensure accessibility and availability for use and reference by all Airway Facilities personnel. Generally, standard three-ring binders will prove to be most convenient. The filing of contractor-developed equipment instruction books, booklets, and brochures in binders shall receive prompt attention.

27. GOVERNING DIRECTIVES. For further details on documentation requirements, refer to agency Orders 1320.1C, 1320.33B, Equipment Modification and Facility Instruction Directives, 1320.35A, Preparation of Airway Facilities Service Maintenance Handbooks, 1720.18B, 1720.30B, and 6030.45, Facility Reference Data File.

28.-29. RESERVED.

SECTION 2. DIRECTIVES IMPROVEMENT PROGRAM

30. INTRODUCTION. All Airway Facilities personnel are invited to participate in the Directives Improvement Program in accordance with provisions in Order 1320.1C, paragraph 205. Maintenance technical directives may include a form letter for suggestions for improvement, similar to the one at the end of this order.

31. BASIC CONCEPTS. The directives improvement reporting system provides a feedback channel into the management information system for correction of deficiencies in the system. Users are the best source for detecting deficiencies having an adverse effect on agency operations and offering realistic improvements.

32. SCOPE. This program is intended to incorporate recommendations triggered by **direct observation** of conflicts, ambiguities, or other factors, experienced in day-to-day use. The scope of the directives improvement program includes the following areas, from a user's viewpoint, which would enhance the effectiveness of the system or help increase the productivity of agency operations:

a. Delegations of authority are needed, are not clear, or are in conflict.

b. Regional directives that say the same thing as an agency directive, or would be more usable as supplements to an agency directive.

- c. Sector level directives that appear to have regionwide application and should be issued by the region.
- d. Regional directives that appear to have agencywide application and should be issued by the agency.
- e. Incorrect, misleading, conflicting, or incomplete procedures leading to inefficiency.
- f. Omitted or ambiguous information.
- g. Old directives that need updating because of organization, policy or other changes.
- h. Obsolete directives that no longer serve any purpose should be canceled.
- i. Fragmented directives that should be consolidated under one title for the same audience or incorporated in an existing handbook to reduce conflict or redundancy, and to enhance data retrieval.
- j. Other significant improvements such as rambling, poorly organized, hidden action paragraphs, too difficult to read, confusing, incorrect distribution.

33. RESPONSIBILITY. The Directives Management Officer (DMO) at the regional and headquarters office having purview shall coordinate and expeditiously process all Directives Improvement Reports received.

34.-35. RESERVED.

SECTION 3. REPORTING AND RECORD FORMS

36. INTRODUCTION. This section describes the various FAA forms that Airway Facilities maintenance personnel will use most in the performance of day-to-day technical duties. Reference to FAA directives that authorize and explain the use of the forms are provided where appropriate.

37. FACILITY REFERENCE DATA FILE (FRDF).

a. This is a facility reference data file that provides comprehensive, quantitative, and permanent records showing how systems/subsystems/equipment performed at the time of initial acceptance and after major modifications or modernization.

b. This information is required in connection with joint acceptance inspection (JAI) and commissioning activities. This historical information serves as a comparison from which day-to-day equipment performance can be evaluated and, in some instances, may contribute significant technical data to the maintenance technician in system/subsystem/equipment certification activities. Order 6030.45 provides guidance on the preparation and use of this data file.

38. FAA FORM 6000-8, TECHNICAL PERFORMANCE RECORD (TPR).

a. Purpose of Form. This series of forms provides a technical performance record of a system or equipment over a specified period of time. This information may be noted on a daily, weekly, or other periodic basis as specified in the appropriate maintenance technical handbooks.

b. Establishment of Form. Maintenance technical handbooks establish the requirement for a performance record form. This may be a standard preprinted form or the temporary use of FAA Form 6000-8, Technical Performance Record - Continuation or Temporary Record/Report Form, or a computer-generated local form. When the FAA Form 6000-8 is used, column headings shall designate the parameter or appropriate manufacturer's documentation to be recorded. These forms may be developed to fit the needs of one or more specific types of systems or equipments. Technical performance records shall be completed separately for each individual geographical location and for each set of equipment (i.e., channel A and channel B, equipment number 1 and equipment number 2, main and standby) as appropriate. Local computer-generated forms may be used with the approval of the regional Airways Facilities Division.

c. Applicability of Guidance. The information contained in the succeeding subparagraphs will generally apply to all technical performance record forms issued. Maintenance technical handbooks will provide specialized guidance on the preparation of forms. When a conflict exists between form preparation guidance, this order shall take precedence.

d. Corrections. All entries shall be made with a ball-point pen or typewriter. Erasures are not allowed; errors will be voided by a single line strikeout and the correct information neatly inserted. The initials of the person making the correction(s) shall be adjacent to the lined out portion.

e. Entry Frequency. Line entries shall normally be made no more frequently than the normal maintenance interval. (Dailies recorded once per day, weeklies once per week, etc.). Exceptions to this interval would be when additional documentation is required, as in post-accident or incident certification, or systems restoration activities.

f. Heading Entries. The facility block shall contain the facility identifier followed by the facility type contraction (i.e., RNO ASR). The facility type contraction shall agree with the current FMF/FSEP list. The location block shall contain the actual name of the FMF/FSEP facility location (i.e., city and state).

g. Column Headings. The column headings on the form are those system performance indicators that are checked or measured most frequently. Do not cross out, paste over, or otherwise modify specified column headings unless directed by the maintenance technical handbook. Enter N/A if the parameter column is not applicable to the equipment involved. Additional space for other parameters is available on the form itself or on continuation sheets, i.e., FAA Form 6000-8. The regions or sectors may utilize this additional space for local purposes as required.

h. Date and Time Entries. The month and year shall be entered in the date heading. When the form is used to cover more than one month, enter the year in the date heading and the month and day on each line entry. Time entries shall be made in **UTC**. An old form may be replaced with a new one as needed. Forms having few entries may be used over multiple years. When this is done, the first year shall be entered in the date heading. Subsequent years shall be separated by the new year being entered on a separate line entry in the date column.

i. Nominal Block Entries. Nominal entries shall note the desired parameter value and operating tolerance or limits; as prescribed in maintenance technical handbooks (blue sheets), equipment instruction books, or other appropriate reference data. The other appropriate reference data may be based upon commissioning, flight or ground inspection, or locally developed data. The following instructions shall apply:

(1) Numerical Entries.

(a) When the column heading data is identified in the maintenance technical directive or equipment instruction books, the standard value shall be used in the nominal block. The operating values shall be included in the parameter heading immediately above the nominal block as the tolerance/limit. The tolerance values may be noted in any convenient manner that does not require reference to the handbooks each time the checks are made. If the parameter block does not have room for the operating limits (as in some preprinted forms), a **6000-8** form may be used or the operating values may be entered in the lines immediately below the nominal line.

(b) When the column heading data is not identified in the maintenance technical directive or equipment instruction book, the nominal value shall be the Facility Reference Data File value. If that value is not available, then the commissioning, flight/ground inspection, or locally developed value shall be used.

(c) When a nominal value changes, the current form shall be terminated and a new form initiated to reflect the changed value. The reason for the changed value shall be noted in the remarks column of both forms, and a corresponding entry providing the reason(s) for the change noted in the appropriate facility maintenance log.

(2) Nonnumerical Entries. When nonnumerical entries are appropriate under a column heading (e.g., focus, brightness, intelligibility, or other subjective observations), the entry shall be a checkmark (✓). This checkmark will be preprinted on the form or shall be entered manually as each sheet is started.

j. Line Entries. These entries are the observed values of the operating data being recorded. Lines shall not be left blank to separate successive entries.

(1) Numerical Entries.

(a) Enter the as-found parameter value in the appropriate column.

(b) If the as-found value is beyond the operating tolerance or limit, circle the entry to note an out-of-tolerance condition. When corrected, record the as-corrected value on the same line in the remarks section of the form. If the remarks block is not large enough or does not exist, the next line may be used to record the corrected value.

(c) Any adjustment made to correct an out-of-tolerance condition may affect previous data entries. If this occurs, those parameters shall be remeasured and the new values recorded in the remarks section, as above.

(2) Nonnumerical Entries.

(a) When a nonnumerical parameter is satisfactory, enter a checkmark (✓) in the appropriate column.

(b) When a nonnumerical parameter is unsatisfactory, enter a circled "X" in the appropriate column. The parameter correction should be noted in the remarks section.

k. Remarks Entries.

(1) A brief explanation shall be inserted in the remarks column as required above. If corrective action must be delayed, this shall also be noted in the remarks column.

(2) A notation in the remarks column in the technical performance record form is not a substitute for a required entry in the facility maintenance log. If appropriate, the entry on the form may reference the more complete entry in the facility log.

l. Review. The entries shall be reviewed for accuracy, trends, etc., by the first level supervisor. The supervisor shall indicate review by dating and signing the next blank line. When the form is complete the supervisor shall date and sign the supervisory review block. A corresponding entry indicating review shall be made in the appropriate facility maintenance log. Sector managers shall establish the **periodicity** of review in consideration of past facility performance and other visit requirements, provided it is done at least annually.

m. Disposition. The forms shall be retained as specified in Order 1350.15B, Records Organization, Transfer, and Destruction Standards.

39. AUTOMATED TECHNICAL PERFORMANCE RECORD. With the advent of remote maintenance monitoring (RMM), certain facility performance and status data will be presented via an automated system. Such data can provide an indication of facility performance and form the basis for facility certification.

a. Performance Deterioration/Status Alarm.

(1) Automated Presentation. Facility data presented automatically need not become a matter of permanent record unless facility performance deterioration or a status alarm requiring remedial action is indicated. In those cases, the control point or remote site technician will take or initiate **followup** action.

The incident and activities associated with it shall be entered in the facility maintenance log where the action was initiated.

(2) Printout Retention. Some facilities continually generate printouts of remote site-monitored data, such as ARTS II and III's, second-generation VORTAC's, etc. One copy of the printouts at these locations shall be retained at the points where the printouts are generated for one calendar month. Copies of these printouts (or the originals) may be referenced by either facility log entries or TPR's as needed, but this practice should be limited to extreme cases. (The first-level supervisor at the generation point will be responsible for the distribution of needed copies or longer retention at the generation point.) Printout copies referenced in either logs or TPR's shall assume the retention criteria of the parent document. Printouts used as TPR's shall be removed from the general flow and retained as such.

b. Periodic Maintenance Callup. Remote site or control point technicians shall periodically access and record facility performance data as required in the applicable technical handbooks or orders. The technician will make appropriate log or TPR entries regarding facility performance, status, or certification based on assessment of the callup data.

c. Remote Access. When maintenance actions are generated at a location while that location is unmanned, the person initiating the action is responsible for ensuring that a corresponding entry is made in the appropriate facility maintenance log. This applies specifically in those cases where a facility is accessed by remote terminal (i.e., portable personal computer (PC)).

40. FAA FORM 4650-10, WARRANTY FAILURE REPORT. FAA Form 4650-10 is used to report equipment failure or a part thereof under warranty. Completion and submission of this form will enable the FAA to obtain a replacement at contractor cost, and a failure analysis on high-failure items. The form is used to minimize parts replacement costs. Order 4650.20A, Reporting and Replacement of Items Failing Under Warranty, provides detailed guidance on the preparation and use of FAA Form 4650-10.

41. FAA FORM 6032-1, AIRWAY FACILITIES MODIFICATION RECORD. Form 6032-1 is used to document the addition or removal of all currently authorized modifications to systems, equipment, and related instruction books in the National Airspace System. The form must accompany the equipment through its full life cycle. The entries on this form constitute a legal record of the modification status of a system or equipment, so it must be kept current and accurate. Order 6032.1A, Modification to Ground Facilities, Systems, and Equipment in the National Airspace System, provides guidance on the preparation and use of this form. Organizations may institute automated measures for storage and processing of this data, but a hardcopy printout must accompany the equipment when moved from that organization.

42. FAA FACILITY MAINTENANCE LOGS. The FAA uses two logging systems to provide an official historical accounting of status, maintenance activities, and a certification record for the facilities and equipment in the National Airspace System (NAS). They are:

a. FAA Form 6030-1, Facility Maintenance Log (Manual). FAA Form 6030-1 manual log is the log presently in use at the majority of FAA facilities.

b. Maintenance Management System (MMS). MMS is a fully automated logging system. When fully implemented, it will replace the majority of FAA Form 6030-1 manual log requirements.

43. FAA REPORTS 6040-3, 6040-4, AND 6040-7.

a. FAA Form 6040-3, Facility and Service Outage Report. FAA Form 6040-3 is a record of facility or service interruptions. Its use is optional, at the discretion of each region. Guidance on the preparation and use of this form is contained in Order 6040.15B, National Airspace Performance Reporting System.

b. FAA Form 6040-4, Equipment Failure Report. FAA Form 6040-4 is used as a record to report failures of a **system** or part. It shall be used when such a reporting program is instituted by local or national directives. Its use is optional, at each region's discretion. The form is normally used when failure data on a particular equipment is required on a sampling basis. Overall guidance on the preparation and use is provided by Order 6040.15B. Additional guidance on specific failure reporting programs will be provided by the implementing directives.

c. FAA Form 6040-7, Line Performance Report. FAA Form 6040-7 is used to record **Telco** line interruption information for facilities serving **ARTCC's**. Guidance on the preparation and use of this form is contained in Order 6040.15B.

44. FAA FORM 7230-4, DAILY RECORD OF FACILITY OPERATION.

a. This form is completed by Air Traffic (AT) personnel as an air traffic operations log. Order 7210.3I, Facility Operation and Administration, requires that this form (or supplemental local forms) be used for identifying equipment problems and restoration information. Airway Facilities (**AF**) personnel are responsible for periodic review of these air traffic logs, unless alternate procedures are in force by local AT and **AF** agreement. The review period should be commensurate with the maintenance activity at the facility. The responsibility should preferably be delegated to a single reviewer on a per-watch or per-day basis. Air Traffic entries relating to equipment or service problems are preceded by an **"E"** for the attention of the **AF** reviewer.

b. The **AF** review shall focus on **"E"** entries, or those indicating a need for **AF** involvement or maintenance action. The reviewer shall mark their initials and the current **UTC** time and date in the margin adjacent to the **"E"** (or at the bottom of the form, if sufficient space is not available). This requirement also applies where local forms are used to supplement FAA Form 7230-4. Air Traffic entries logically related may be noted by a single **AF** response.

c. The initialing of an Air Traffic **"E"** log entry shall serve as an Airway Facilities acknowledgement of that entry. The reviewer is obligated to take or coordinate corrective action with the responsible **AF** office when such action is required.

d. Explanatory entries shall be made in the appropriate **AF** maintenance log for all Air Traffic **"E"** log entries relating to facility and equipment malfunctions requiring corrective action.

45. PERIODIC MAINTENANCE ACTIVITIES FORM. A sector manager (or designee) may elect to develop sector-wide wall charts, index cards, computer records, or other methods for providing a record of prescribed periodic maintenance activities required (excluding daily checks) for each facility. The record shall include date scheduled, date performed, and initials of the person doing the maintenance and entry. The sector manager (or designee) may elect to reference maintenance activities on these charts to the appropriate handbook or instruction book activity (by chapter or paragraph). A facility log entry can then in turn be referenced to these charts. (Example: Weekly maintenance **W1, W2, & W3** completed as per **ASR-7** maintenance charts.) The retention period for these records shall be a minimum of 2 and a maximum of 3 years.

46. PERIODIC MAINTENANCE ACCOMPLISHED. A sector manager shall have available an accounting system to track the percentage of periodic maintenance accomplished. The following method is suggested where **MMS** is not available. (When **MMS** is available, it will provide task accounting.)

a. A periodic maintenance ACTIVITY is a set of tasks to be performed at a prescribed interval; i.e., weekly, monthly, quarterly.

b. A periodic maintenance TASK is a unit of work to be performed under each activity. These tasks are identified and counted according to the maintenance handbook subparagraphs, at the lowest subparagraph. Example: An order may list five subparagraph tasks for a weekly activity on a single unit of equipment. For a main and standby configuration, the task count would be $2 \times 5 = 10$ tasks to be performed each week. (This may not be accurate with manufacturer's handbooks. As this is a suggested method, the tasks may be divided into any logically useful manner desired.)

c. Task accounting should be accomplished for each unit of equipment requiring the task; for example, a remote receiver site containing **12** receivers. If a monthly periodic maintenance activity included four tasks, there would be $4 \times 12 = 48$ tasks to be performed each month for this example.

d. The percentage of periodic maintenance (PM) accomplishment is calculated by dividing the number of tasks accomplished by the number of tasks scheduled and multiplying this by **100**. Example:

$$\text{Tasks Accomplished} \times 100 / \text{Tasks Scheduled} = \% \text{ PM}$$

e. A region may implement a maintenance accounting system to the level desired. For example, they may elect to track annual to weekly maintenance, but not track the more frequent maintenance (daily and twice weekly).

47.-48. RESERVED.

SECTION 4. FACILITY MAINTENANCE LOGS (MANUAL)49. INTRODUCTION.

a. The need for adequate, carefully prepared logs cannot be overemphasized. The logs are the means of documenting equipment performance and maintenance activities, as well as providing a historical record of site events. The FAA is currently using FAA Form 6030-1 (manual) and MMS automated logs to provide the required documentation.

b. FAA Form 6030-1 (manual) logs are the logs presently in use at the majority of FAA facilities. Instructions pertain to FAA Form 6030-1 unless stated otherwise. (Additional log procedures for RMM facilities, such as **second-generation VORTAC's**, are addressed in paragraph 61.)

50. FACILITIES REQUIRING MAINTENANCE LOGS. All facilities listed in the Facilities Master File/FSEP shall be the subject of a log except for pseudofacilities and those identified in appendix 4. Sector managers or designee may require logs at those facilities identified in appendix 4 and may establish other local log requirements as needed.

51. SUBJECT OF THE LOG.

a. The facility identifier followed by the type contraction (e.g., **RNO ASR**) shall be entered in the "Subject of the **Log**" block to identify the facility or equipment for which the log is intended. The "**Station**" block shall contain the location name (city and state) as shown in the **FMF/FSEP**.

b. Control Facility Log. Logs at control facilities for remote sites shall include entries for facilities over which remote control and/or monitoring is exercised from that location. The facility location identifier followed by the type contraction shall be noted in the "Subject of the **Log**" block, and the controlled facilities noted in the "**Subsidiary Log**" block on the front cover.

c. Consolidated Facility Logs. Entries associated with several facilities may be consolidated into one log. Candidates for consolidation would be small facilities that could be logically included in a larger one (**MCR** in the **ATCT** log). Other candidates for consolidation would be facilities in close proximity where few entries are required over a long period of time. The sector manager or designee may consolidate and determine log consolidation configuration within their sector. In allowing for consolidation, the following criteria shall be observed:

(1) The "Subject of the **Log**" shall be identified as the location identifier followed by the selected facility type as determined by the sector manager or designee. Additional facilities covered by the log will be identified as consolidated logs in the subsidiary log blocks on the front cover of FAA Form 6030-1. (See appendix 2.)

(2) Consolidated logs may be established to include different facility types with the same location identifier or multiple facilities of the same type but with different location identifiers or different facility types with different location identifiers. Arrivals, departures, plants and structures work, and other

activities not relating to a particular facility type do not require any preface. All other entries will be prefaced as follows:

(a) If the log includes only different facility types, each entry shall be prefaced with the facility type followed by a dash (-).

(b) If the log includes only multiple facilities of the same type, each with a different location identifier, each entry shall be prefaced with the location identifier followed by a dash (-).

(c) If the log includes both different facility types and multiple facilities of the same type, each entry shall be prefaced with the location identifier followed by the facility type followed by a dash (-).

(3) Because the "Subject of the **Log**" block only contains one of the facilities, it is difficult to keep track of which facilities are in what log after the white pages have been removed. To overcome this problem, a list of the facilities consolidated into a particular log shall be kept on file with the white pages of the log.

(4) Consolidation shall not render a specific facility history unreasonably difficult to trace.

d. Service Logs. Service logs are not required, but service interruptions shall be documented in a designated log at the responsible facility and reported as required by the current Order 6040.15B. The sector manager, or designee, shall make this log determination.

52. LOCATION OF LOGS. Logs should be kept in the immediate vicinity of the log subject. Exceptions are allowed where this is impractical, but the location shall be designated (in writing) by the first-line supervisor. The alternate location shall provide convenient access and protection from the elements. Logs shall be structured so arrival and departure entries at a given location need not be duplicated in more than one log.

53. LOG ENTRY AUTHORITY. Log entry authorization must be made a matter of written record by the sector manager, the sector manager's designee, or higher authority; and issued on the basis of need, cognizance, and competence. Log entry authorization for non-FAA personnel will be restricted to those under contract. Such personnel will require written log entry authority from the contractor, and the sector manager provided with a list of personnel so authorized. In all cases individual and blanket assignment letters are acceptable forms of written authorization, but must specify individuals by name. (A notation such as "representative from XYZ Corporation" is not acceptable.) Regional or headquarters FAA personnel on official business will make log entries concerning that visit when requested by sector personnel.

54. LOG FORMAT. Legible entries shall be made in the facility log with a typewriter or ball-point pen. All information noted shall correlate with related data on other forms, records, and reports; including FAA Forms (6000 series), Technical Performance Record, FAA Form 6040-3, Facility and Service Outage Report, and forms required by Order 6040.15B. Maintenance activities logged shall cite the appropriate instruction books, maintenance technical handbooks, directives,

maintenance charts, or other documents needed to support the entry as a complete, understandable statement.

a. Corrections. There shall be no erasures or deletion of the entered data. A corrected entry is mandatory for erroneous entries relating to a facility interruption. Errors shall be corrected by one of the following two methods.

(1) The PERSON MAKING THE ERROR can void the entry with a single line strikeout, followed by their initials and the corrected version. This method shall only be used when the correction can be entered adjacent to or immediately below the erroneous entry.

(2) An entry in error shall be corrected with an additional entry referenced to the erroneous entry by date and time. The person making the correction shall then note the date and time of the corrected entry and their initials in the margin adjacent to the erroneous entry.

b. Initials. The originator shall initial the entry in the area **provided** on the last line of the entry. Two-party entries shall be initialed by the originator's initials on top, a slash (/), and the second party's (observer, or second technician) initials under the slash in the initial box. If additional initials are required, they shall be entered in the remarks area. Certification entries shall be single party entries. In the event two persons at a facility have identical initials, the supervisor shall assign distinctive initials (for logging purposes) to one or both to avoid entry confusion.

c. Page Numbering. All serialized log pages shall remain in numerical order with exceptions noted. When starting a new log, the serial number of the last page of the old log shall be referenced in the first entry of the new log. The serial number of the first page in the new log shall be referenced in the last entry of the old log or in the lower right margin of the last page. (See appendix 2.)

d. Month and Year. The month and year corresponding to the beginning entry on each page of the log shall be entered in the **"Month and Year"** block at the top of each page of the log. The remarks area of the first entry for each calendar month shall contain only the month followed by the year, i.e., "January 1988." (See appendix 2.)

e. Date and Time. All entries shall be referenced to date and Coordinated Universal Time (UTC). Consecutive entries on the same calendar date need not be dated at each entry, but the date is required on the first and last entry of each page. Entries continued from the previous page need not have a date and time on the continued portion.

f. Log Interval. Log interval is that interval from the first logging event which is made in conjunction with the establishment of a facility to the last logging event which is made in conjunction with the removal of the facility. The first entry of the log interval shall begin with the statement **"First Entry."** For a consolidated log, the statement **"First Entry"** shall be prefaced by the facility type and location identifier followed by a dash (-), which the entry relates. The last entry of the log interval shall be a single line entry and contain the statement **"Log Terminated."** For a consolidated log, the statement **"Log**

Terminated" shall be prefaced with the facility type and location identifier followed by a dash (-) to which the entry relates.

g. Conciseness. Log entries shall be clear, complete, and concise. The log is a historical documentation of fact, as perceived by the person making the entry. Elaborate detail or opinion shall be avoided. The use of recognizable abbreviations, reference to substantive records, or directives is encouraged in expressing activities in the clearest manner. The following references provide approved word and phrase contractions:

(1) Order 1375.4A, Standard Data Elements and Codes--Facility Identification and Supplemental Standards.

(2) Order 6000.5B, Facilities Master File.

(3) Order 7340.1L, Contractions.

(4) NAS MD-001, National Airspace System Configuration Management Document.

h. Analytical Codes. Facility certification, interruption/outage, and reportable reduced facility/service entries shall require codes in FAA Form 6030-1 manual log. Refer to the appropriate codes below. (See appendix 2.)

CODE CATEGORY.

Noninterrupt Code:

51 - Certification

Scheduled Cause Codes:

60 - Periodic Maintenance

61 - Commercial Lines

62 - Improvements

63 - Flight Inspection

64 - Administrative Outage

65 - Corrective Maintenance

66 - Periodic Software

67 - Corrective Software

68 - Related

69 - Other

Nonscheduled Cause Codes:

- 80 - Equipment Failure
- 81 - Commercial Lines
- 82 - Prime Power
- 83 - Standby Power
- 84 - Interference
- 85 - Weather Effects
- 86 - Software
- 87 - Unknown
- 88 - Related
- 89 - Other

NOTE: Detailed explanations of codes 60 through 89 are contained in Order 6040.15B. Code 51 will be used on certification entries.

i. Interruptions. A loss of user facility service shall be noted in manual logs by the use of cause codes and slant bars. A slant bar shall be placed to the left of the time entry for the start of the service loss, and a slant bar to the right of the time entry for the end of the service loss. Interruptions of less than 60 seconds may be a single line entry, with the slant bars placed before and after the time entry. These rules also apply to the reportable services. Slant bars shall not be used for reduced service/reduced equipment entries. (See appendix 2.)

j. Delayed Entries.

(1) Delayed entries shall be made only when necessary to complete the record for a facility interruption or service interruption. The entry shall use the date, time, and code of the interruption, and include slant bars. The remarks entry shall begin with the notation "**delayed entry**" in parenthesis, and include the entry date and time; i.e., "(Delayed Entry, 1/14 1745)." (See appendix 2.)

(2) Entries concerning routine maintenance activities in the past should be made with the time of the entry in the left-hand columns, contain the date and time of the activity, and note the reason the entry was not made coincident with the event. (See subparagraph (1), for delayed entry certification policy.)

k. Page Breaks. At times it will be necessary to break the line sequencing of log entries (for purposes of on-site overview, aircraft accidents, or other reasons). In those cases, the last page of entry in the log sequence shall be noted with a final entry. Unused lines on the page shall be lined out with one diagonal line and the closure statement "**Last Entry This Page**" included at the end of entry. The entry shall then be initialed and the right hand block at the bottom of the page signed and dated.

l. Certification. The certification statement shall be entered as specified in the maintenance technical handbooks. The statement shall be preceded by code 51 and be a single line entry (or single sentence, if the desired statement exceeds one line). Multiple certification statements made at the same time (on unlike equipments) shall be made with successive entries each starting on a new line. Facilities with multiple similar equipment may use an inclusive

certification statement. For example, "all" (or a partial list) of the communication frequencies at a facility may be certified with a single entry, in lieu of listing the separate frequencies. The certification entry shall precede a "return to service" entry in conjunction with facility restoration entries. With the exception noted in paragraph 61 or a remote certification requirement, delayed certification entries are not allowed. (Example: A technician may certify an ILS based on flight check data where a site access problem prevented a regular onsite certification.)

55. ACTIVITIES REQUIRING LOG ENTRIES.

a. Entries in the logs shall provide a complete historical accounting of activities related to facility status, certification, operation, or performance.

b. Entries will include but are not limited to:

(1) Arrivals and departures at facilities not manned. The sector manager or designee shall specify in writing the sites, hours, log (where several logs are used at the same location), and extent site visits will be logged. At least one entry shall include the purpose of the visit, if that is not apparent from other entries.

(2) Scheduled or unscheduled interruptions/outages and related activities.

(3) Start and completion of periodic or corrective maintenance actions performed.

(4) Identification of failed equipment components by reference designation, part number, or serial numbers.

(5) Start and completion of flight inspections (where onsite personnel are involved or notified), technical inspections, and aircraft accident investigations. (Necessary reference to other supportive documentation regarding facility status as a result of these activities shall be included.)

(6) Equipment changes or replacement, including transfers and channel changes.

(7) Modification, commissioning, or decommissioning activities.

(8) Pilferage, vandalism, or related events.

(9) Adverse weather effects, commercial power failures, access road problems, or any other conditions deemed to have impact on facility or air traffic operation.

(10) Certification or decertification.

(11) Visits by regional or headquarters personnel.

56. COORDINATION. Coordination entries concerning facility transfer, channel change, shutdown, or restoration shall state the organizational element and initials of the person contacted (i.e, FSS (JS), ARTCC (LC), ATCT (RD)).

57. INPUT FROM SOURCES OUTSIDE THE AIRWAY FACILITIES SECTOR. All statements regarding facility operations or status made by Air Traffic, Flight Inspection, or other organizational representatives (FAA or non-FAA) shall be entered into the log by designated personnel only. The source of the statement shall be identified by last name and organization. With facility work projects, the name of the person in charge of the project shall be noted. Any known effects of the project on facility operation or status shall be included in the entry.

58. REVIEW. Facility logs shall be subjected to three levels of review. These will be:

a. Onsite Technical. Airway Facilities personnel making log entries shall review each entry for technical accuracy to ensure that the entry is complete, legible, and concise before initialing. They shall also ensure that all corrections or additions are properly cross-referenced and the yellow copy is an accurate white copy reproduction. A disparity may occur between white and yellow copies due to accidents with the carbon. When this happens, the original entry shall be repeated on the yellow sheet, with a note of explanation. Use of the lower right hand signature block is no longer required, except as specified in paragraph 54k.

b. Onsite Overview.

(1) The site supervisor or designee shall conduct an onsite log overview prior to removal of the white pages. This review shall address log procedural or policy discrepancies, technical completeness, detection of facility performance trends, and recurring malfunctions. Noted logging discrepancies shall be brought to the attention of the person making the entry in the interest of corrective instruction. Mistakes or unclear entries shall be corrected by an additional entry referenced to the erroneous entry by date and time. (Deletions are not allowed.) The log reviewer shall make and date appropriate notes in the margin near the discrepancy, identifying the location of the correction by reference to the correction entry date and time.

(2) The reviewer shall verify that the yellow copy is a reproduction of the white page and signify that a review was completed by dating and signing in the lower left block at the bottom of the last page reviewed. The log review shall contain a statement that identifies the log review period, e.g., "Log reviewed for period 4/6/89 at 1500 to 6/15/89 at 0915." The white pages shall be removed for further disposition in accordance with paragraph 59a.

(3) The log review and white page collection frequency shall be determined by the sector manager or designee, but shall be at least annually.

c. Administrative Review. The sector manager or designee shall conduct administrative log reviews. Reviews at this level are intended to detect facility performance deterioration trends and recurring malfunctions. During these reviews, no deletions, corrections, or additions to previously made entries are

permitted. Errors at this level will be brought to the attention of the **first-** level supervisor for the prevention of similar future errors.

59. DISPOSITION.

a. Distribution. The original white pages of the maintenance logs (except classified logs) shall be removed to the sector office or field office coincident with the **onsite** review by the first level supervisor or designee. The yellow log pages will be retained at the facility.

b. Retention. The retention period for both white and yellow log pages (FAA Form **6030-1** and **6030-2**) shall be a minimum of 2 and a maximum of 3 years. The 3 year period may be used when a yearly bulk storage and destruction procedure is used. If that is not the case, destruction after 2 years is preferred. Providing there are no unresolved claims against the Government with regard to the facility involved, all log copies must be destroyed after 3 years. (Refer to Order **1350.15B**.)

c. Storage and Destruction. Logs are to be destroyed at the office or facility of concern, except as noted in subparagraphs **59d** and **59e** below. Storage and destruction of FAA Forms **6030-1** and **6030-2** shall be in accordance with Order **1350.15B**.

d. Classified Logs. Both white and yellow copies of classified logs shall be retained at the facility. The retention period shall be the same as nonclassified logs. (See subparagraph **b**.) At the end of this period, they shall be transferred to the regional office for destruction in accordance with Order **1600.2C**, National Security Information. No classified data shall be keypunched or placed into automated history files.

e. Aircraft Accidents. The sector manager or designee may direct that appropriate page(s) of the log be forwarded to the sector office for review and signature upon consideration of the seriousness of the accident and extent of possible facility involvement. The sector manager or designee shall then review and sign each page containing information relative to the accident or incident. Disposition of these pages will then be in accordance with Order **8020.11**, Aircraft Accidents and Incidents-Notification, Investigation, and Reporting.

f. Mobile Facilities. Both the white and yellow copies of the logs associated with mobile facilities will be filed at the facility until it is removed from service at a particular location. At that time the log white copies shall be forwarded to the controlling office. The yellow copies shall remain with the mobile facility. The retention period and destruction requirements for both copies are the same as nonmobile facilities. (See subparagraph **b**.)

60. LOAN OF FACILITY MAINTENANCE LOGS.

a. Neither access to, nor copies of the facility maintenance log shall be provided to anyone outside FAA without prior approval of the regional Airway Facilities Division of concern or the Washington office. The same permission is required before the sector manager or designee may provide such access or copies.

6000.15B

b. Originals released for any purpose will be limited to the log white copies, and shall be receipted for and returned to the sector manager or designee as soon as possible.

c. An accurate and complete listing of all white copies loaned shall be maintained by the sector manager or designee. This list shall show the date, to whom lent, for what purpose, and the date returned.

d. The yellow copies shall never be loaned.

61. REMOTE MAINTENANCE MONITORING (RMM).

a. These facilities are remotely controlled and monitored from other locations, such as **FSS**, **ARTCC**, **MCC**, and work centers. The monitor function may include a printer that provides a history of attended and unattended activities with the facility. A dial-up line may also be available for telephone interface with portable terminals, and allows restoration, certification, maintenance, and other activities to be performed from any location with a telephone line. Examples of **RMM** facilities are second-generation **VORTAC** and **ASR-9**.

b. The **RMM** facilities will use automated logging procedures when incorporated in the **MMS**. In the interim, multiple Facility Maintenance Logs, FAA Forms **6030-1**, may need to be established to capture a complete history of events for the subject facilities. Logs may be established as outlined in subparagraphs (1), (2), and (3) below. Events on the subject facility documented in one log need not be duplicated in another log. All events affecting the subject facility shall be documented in one of the designated logs, e.g., routine maintenance done at the facility will be documented in the facility log; activities done at a control point will be documented in the control point log.

(1) The facility site location.

(2) At the control and monitoring facility location(s). Where control and monitoring is shared by different locations, a log shall be established at each location. Local agreements shall be established to insure that the sector responsible for the facility has access to all historical data.

(3) Other locations as designated by the sector manager or designee. This designation shall be in writing.

c. Under unusual circumstances, **RMM** facilities may be accessed from locations that do not contain a designated log. In those circumstances, the individual accessing the facility will insure that the appropriate log entries are made in one of the logs for the accessed facility. The entries will need to be made via the delayed entry format, and the rule against delayed entry certification is waived in this case.

d. At **RMM** facilities that have a printer that provides a history of attended and unattended events, a copy of the printout shall be retained for 1 month or until the first-level supervisor's log review, whichever is later.

62. RESERVED.

SECTION 5. AUTOMATED FACILITY MAINTENANCE LOG**63. INTRODUCTION.**

a. The need for proper and thorough documentation of equipment performance and activities at FAA facilities cannot be overemphasized. With the Maintenance Management System (**MMS**) as a fully automated logging system, this section will provide guidance on the use of **MMS**.

NOTE: Detailed **MMS** user instructions for making the appropriate type entries can be found in the **MMS Users Manual TI 6030.1**.

b. Automated logs will be established at facilities where and when such capability exists. Manual logging at a facility shall be discontinued when an automated system is implemented.

c. Security in the automated system will be maintained through a layered access authorization requiring password entry to system functions. Authorized users will be granted general **autolog** access to the system as a whole and a specific certification access according to requirements and qualifications. The user's password is required as authenticating identification with each log entry.

Access to other subsystems such as security, data base maintenance, and high-level report functions will be granted in accordance with the needs and responsibilities of the individual users.

64. MMS LOG REQUIREMENTS. The **MMS** Logging Activity Subsystem maintains all the required facility maintenance logs that are required by this order.

65. LOCATION OF LOGS. In the past logs were kept in the immediate vicinity of the log subject. With **MMS**, logging may be done with a maintenance data terminal (MDT) at any location. The sector manager or designee shall provide convenient access to the **MMS** for the specialist.

66. LOG ENTRY AUTHORITY. Log entry authorization must be made a matter of written record by the sector manager, the sector manager's designee, or higher authority. Log entry authorization shall not be granted until the employee completes required **MMS** training and demonstrates cognizance and competence to make entries.

67. LOG FORMAT. Appropriate logging screens shall be used to record all activities/data. Information noted shall correlate with related data on other forms, records, and reports; including FAA Forms 6000-8.

a. Corrections. There shall be no deletion of the entered data. The original entry is still in **MMS** and can be retrieved. Erroneous entries shall be corrected by:

(1) Voiding the entry in error and making a correct entry. The new entry will relate to the voided entry. All voided entries should have explanatory comments to give continuity to the log entry.

(2) Retrieving the original entry that has the error and then make the appropriate corrections. Corrections to the original log entry should be accompanied with an explanatory comment.

b. Initials. The originator (person making the entry) shall have his/her initials automatically entered into the log as the part of **the user** identification (ID). Two-party entries will have the originator's initials entered automatically, and the second party's initials will be entered in the comments area by the originator. **MMS** only allows one set of initials per sector location to be used by an employee. An employee shall not be assigned two sets of initials.

c. Log Identification Numbers. Unique log identification numbers are automatically assigned by **MMS** to all log entries that are added to **MMS** files.

d. Related Log Entries. **MMS** provides the user with a mechanism for linking all log entries associated with a specific event. The RELATED LOG ID field is used for this purpose.

e. Date and Time. All entries shall include date and time (UTC) to specify the beginning and end of the event.

f. Delayed Entries. The system automatically dates and time-stamps every entry when it is entered into the system. Future hard copies of log reports shall include system date and time. Delayed entries shall be made only when necessary to complete the record for all log entries. Log entries entered in a maintenance data terminal (MDT) not connected to the maintenance processor system (**MPS**) are not delayed entries.

g. Interruption/Outage Log Interruption Report (LIR). Each facility/service interruption, regardless of duration shall be entered by the use of the **LIR** screen.

h. Certification. **MMS** supports logging of scheduled and **unscheduled** certifications. **The certification** statement shall be entered as specified in the maintenance technical handbooks. This can be accomplished by the user entering the actual statement in the comments area or requesting **MMS** to **insert** the required statement.

i. Analytical Codes.

(1) Facility interruption entries shall require the standard codes from Order 6040.15B.

(2) Additional codes, which are non-interrupt, shall be used as follows:

00 - Administrative

01 - Log review

02 - "E" entries as identified in paragraph 44. Code 02 shall be used for explanatory entries in the appropriate **AF** maintenance log for Air Traffic "E" log entries relating to facility and equipment

malfunctions requiring corrective action when no other codes are applicable.

03 - Aircraft accident/incident. All entries shall use a code 03 that relate to any aircraft accident/incident.

51 - Certification

52 - Decertification. This will be used when any certification is removed from a service, system, or equipment.

55 - PM not performed (total PM incomplete). Code 55 will be used on partial PM entries; where discovered failures lead to prolonged corrective action.

j. Temporary Log. Hard copies of appropriate logging screens shall be kept on hand and shall be initiated for temporary logging purposes when the automated logging system is out of service. The temporary entries shall be transposed to the automated system when the system is restored, and the temporary hard copies shall then be destroyed.

68. ACTIVITIES REQUIRING LOG ENTRIES.

a. Entries in the logs shall provide a complete historical accounting of activities related to facility status, certification, operation, or performance.

b. Entries will ~~include but~~ are not limited to:

(1) Arrivals and departures at facilities not staffed. The sector manager or designee shall specify in writing the sites, hours, and extent that site visits will be logged. At least one entry shall include the purpose of the visit, if that is not apparent from other entries.

(2) Scheduled or unscheduled interruptions/outages and related activities.

(3) Start and completion of periodic or corrective maintenance actions performed.

(4) Identification of failed equipment components by reference designation, part number, serial numbers, or other information.

(5) Start and completion of flight inspections (where on-site personnel are involved or notified), technical inspections, and aircraft accident investigation. (Necessary reference to other supportive documentation regarding facility status as a result of these activities shall be included.)

(6) Equipment changes or replacement, including transfers and channel changes.

(7) Modification, commissioning, or decommissioning activities.

(8) Pilferage, vandalism, or related events.

(9) Adverse weather effects, commercial power failures, access road problems, or any other conditions deemed to have impact on facility or air traffic operation

(10) Certification or decertification.

(11) Visits by regional or headquarters personnel at these locations that do not have an official visitors log.

69. COORDINATION. Coordination entries concerning facility transfer, shutdown, or restoration shall state the organizational element and initials of the person contacted (i.e., AFSS (JS), ARTCC (LC), ATCT (RD).)

70. INPUT FROM SOURCES OUTSIDE THE AIRWAY FACILITIES SECTOR. Each statement regarding facility operations or status made by Air Traffic, Flight Inspection, or other organizational representatives (FAA or non-FAA) shall be entered into the log by designated personnel only. The source of the statement shall be identified by last name and organization. With facility work projects, the name of the person in charge of the project shall be noted. Any known effects of the project on facility operation or status shall be included in the entry.

71. REVIEW. The facility log shall be subjected to three levels of review. These will be:

a. Onsite Technical. Airway Facilities personnel making log entries shall review each entry for technical accuracy to ensure that the entry is complete and concise before entering the entry. They shall also ensure that all corrections or additions are properly cross-referenced utilizing correct log ID numbers.

b. Onsite Overview.

(1) The site supervisor or designee shall conduct a log overview. This review shall address log procedures or policy discrepancies, technical completeness, detection of facility performance trends, and recurring malfunctions. Noted logging discrepancies shall be brought to the attention of the person making the entry in the interest of corrective instruction. Mistakes or unclear entries shall be corrected.

(2) The log review frequency shall be determined by the sector manager or designee but shall be at least annually.

(3) A log review statement will be entered in the administrative/general (LAD) log indicating type of logs, period of review, and discrepancies noted.

c. Administrative Review. The sector manager or designee (except in the case of aircraft accidents) shall conduct administrative log reviews. Reviews at this level are intended to detect facility performance deterioration trends and recurring malfunctions. Noted logging discrepancies shall be brought to the attention of the first-level supervisor for the prevention of future errors. Mistakes or unclear entries shall be corrected.

72. DISPOSITION OF AUTOMATED LOG ADP DATA. Mainframe data bases and files require periodic backup and archiving to ensure that loss of data does not occur.

The following provide instructions for retention, destruction, and storage of this data:

a. Backup Copies. Shall be accomplished as follows:

- (1) Daily backups of all MMS logging data files.
- (2) Weekly backups of all MMS data base files.
- (3) Monthly backups of all files resident on the MPS.

NOTE: The Transaction Monitoring Facility (TMF) utility shall be properly configured, maintained, and operational whenever the MMS application is in use.

b. Archive Copies. Entries shall be retained on-line for a minimum of 1 year and a maximum time as determined by operational needs by the system administrator.

c. Retention. The retention period for archived data and hard copy log data shall be a minimum of 2 and a maximum of 3 years. The 3-year period may be used when a yearly bulk storage and destruction procedure is used. If that is not the case, destruction after 2 years is preferred. Providing there are no unresolved claims against the government with regard to the facility involved, all log copies must be destroyed after 3 years. (Refer to Order 1350.15B.)

d. Storage and destruction. Storage and destruction of automated data shall be in accordance with Orders 1600.54B, FAA Automated Information Systems Security Handbook, and 1350.15B except as noted in paragraph 73.

e. Classified Logs. No classified data will be contained in MMS.

73. AIRCRAFT ACCIDENTS.

a. The sector manager or designee may direct that appropriate hard copy of the log be forwarded to the sector office for review and signature upon consideration of the seriousness of the accident and extent of possible facility involvement. The sector manager or designee shall then review and sign each page containing information relative to the accident or incident. Disposition of these pages will then be in accordance with Order 8020.11.

b. Detailed instructions for preparing an aircraft accident/incident log are in the MMS Users Manual, TI 6030.1.

74. LOAN OF FACILITY MAINTENANCE LOGS,

a. Neither access to, nor copies of, the facility maintenance log shall be provided to anyone outside the FAA without prior approval of the regional Airway Facilities Division of concern or the Washington office.

b. Local hard copy utilization shall be as specified by the sector manager or designee. Hard copies intended for non-FAA use shall be certified as

representing facility log entries for the periods addressed and signed by the sector manager or designee.

75. RESERVED.

CHAPTER 3. GENERAL TECHNICAL MAINTENANCE PROCEDURES AND CRITERIA

SECTION 1. TECHNICAL COGNIZANCE AND REQUIREMENTS

76. INTRODUCTION. Each Airway Facilities personnel is charged with the responsibility of providing maintenance support in the operational activities of the NAS.

77. OBJECTIVE. This chapter provides the general standards, criteria, and requirements to be met by the operational manpower system to ensure system safety, integrity, and productivity. It is the prime directive to management and AF personnel that the FAA operational mission shall be accomplished in accordance with agency policy, standards, and procedures to ensure optimum performance at minimum life-cycle cost with maximum effectiveness of maintenance manpower.

78. SCOPE. This chapter summarizes all phases of technical maintenance procedures, supplementing section-by-section, other, more detailed technical directives of reference. It primarily deals with the performance of maintenance and related tasks on operational airway facilities in the field.

79. MAINTENANCE FAMILIARIZATION. All personnel engaged in airway facilities maintenance activities are required to familiarize themselves with Airway Facilities policy, general philosophy, and procedures, particularly those having a direct bearing on the areas of specialty, facilities, or systems involved, including:

a. Equipment Characteristics. Operational characteristics including:

(1) Technical standards and procedures as published in appropriate maintenance technical handbooks and equipment instruction books.

(2) Technical performance record data.

(3) Commissioning data.

(4) Ground check data.

(5) Flight inspection data.

(6) Use and care of test equipment.

b. Safety. Published precautions and procedures applicable to maintenance activities. See chapter 6 of this order.

c. Waivers/NCP'S. Cognizance of each waiver applicable to that equipment/subsystem/system/facility.

d. Documentation. Technical documentation applicable to the system/subsystem/equipment/facility maintenance activities.

e. Coordination. Awareness of the role of that facility in the National Airspace System and the coordination with agency and nonagency personnel.

80. LIAISON RESPONSIBILITIES. Airway Facilities personnel shall be cognizant of the interaction between their duties and responsibilities and those of others, both within and outside FAA. A liaison shall be established with those indicated below to ensure that, insofar as practicable, the mission of the agency as a whole can be accomplished in a timely, efficient, and effective manner.

a. Air Traffic Personnel. Airway Facilities personnel shall coordinate, in advance, with Air Traffic personnel any maintenance activities that may adversely affect the use of a commissioned facility. A Notice to Airmen (NOTAM) shall be issued when required. See Order OA 6030.5, Service Availability of Commissioned Facilities of the National Airspace System. Some conditions requiring close coordination with Air Traffic personnel are described below.

(1) Periodic maintenance shall be performed with minimum interference to facility operation. It is expected that Air Traffic personnel will recognize the need for releasing equipment for scheduled routine maintenance work and will cooperate in practices that will assure continuous and reliable operation.

(2) Whenever performing any operation where an interruption would be observed by a user (e.g., a change of transmitters, inservice frequency, or any other inservice function), Airway Facilities personnel shall not start their activities until the appropriate air traffic control facility concerned has been notified.

(3) Immediately upon equipment failure or upon notification that a facility is out-of-service because of equipment failure, Airway Facilities personnel shall take appropriate action to determine the cause of the outage and perform the necessary corrective maintenance to restore the facility to normal operation. See chapter 5, section 3, of this order. If the corrective action involves characteristics that can only be verified by flight inspection, the facility shall not be returned to service until flight inspection has been accomplished.

(4) Whenever an out-of-tolerance condition is detected, Air Traffic personnel shall be notified. See paragraph 139.

(5) When transferring the facility to standby power.

(6) Whenever service can be restored after an outage of a system or equipment.

(7) When potential service interruptions may be caused by construction or modernization, they must be publicized by advance NOTAM's in accordance with FAA policy.

(8) When the maximum certification interval has been exceeded.

b. Flight Inspection Field Office. Airway Facilities personnel usually will be required to work with Flight Standards personnel during flight inspections. This is discussed in paragraph 112.

c. Other Government Agencies. Airway Facilities personnel shall coordinate their activities with other Government agencies, in accordance with individual

maintenance technical directives and other FAA directives. This is particularly important in regard to maintenance activities on joint use facilities, systems, subsystems, and equipment, as well as military and civil defense readiness activities.

d. Local Authorities. Airway Facilities personnel shall cooperate with local government authorities (including fire and police officials) in areas involving compliance with codes, ordinances, protection of property, security, safety, or other factors, as appropriate to the FAA mission in general and in the performance of their assigned duties in particular.

e. Telephone Companies. Airway Facilities personnel shall coordinate their activities with appropriate telephone company personnel to expedite tests and repairs of telephone lines and equipment. See Order 6000.22, Maintenance of Two-Point Private Lines.

81. STANDARDS AND TOLERANCES/LIMITS.

a. Explanation. Each essential system, subsystem, and equipment performance parameter has been assigned a standard value that usually is the optimum value from a systems engineering viewpoint. These standard values are compatible with the system as a whole and the design capability of the equipment involved. In addition, each parameter (standard value) has been assigned an "initial" and an "operating" tolerance/limit expressed in terms of permissible deviation from the standard or in absolute maximum and/or minimum performance levels, as appropriate, for use during maintenance and certification activities. The standards and tolerances prescribed in maintenance technical directives are based on system and monitor requirements, specifications under which the equipment was manufactured, and use of standard test equipment. Equipment standards may be listed in certain instances, but are normally found in individual instruction books. If discrepancies exist between the standards and tolerances listed in maintenance technical directives and individual instruction books, the maintenance technical directive shall take precedence.

b. Monitor Alarm Standards vs. Maintenance Standards. Where system, subsystem, or equipment parameters are monitored, the monitor alarm standards and tolerances/limits for the parameters often differ from the maintenance standards and tolerances/limits for the same parameters. The maintenance tolerances/limits are considered quality-control type requirements; exceeding these tolerances will usually not endanger the user. On the other hand, the monitor alarm tolerances/limits are considered the points beyond which conditions may be unsafe. Therefore, maintenance standards and tolerances/limits are generally more stringent than monitor alarm standards and tolerances/limits. This relationship provides an early warning for action on system performance derogation situations. For example, the operating tolerance/limit for a transmitter power output may be "less than 40 percent reduction" from the specified standard value, whereas the monitor alarm point may be a 50 percent reduction from the specified standard value. Thus, if the transmitter power output is found to have deteriorated 45 percent from the standard value, corrective maintenance action would be required; but the monitor would not have alarmed and no outage would have occurred.

c. Adjustment to Optimize Operation.

(1) To avoid the unnecessary expenditure of manpower, repairs or adjustments to facilities, systems, subsystems, and equipment are required only if one or more of the performance parameters listed in the appropriate maintenance technical directive or manufacturer's instruction book meet any one of the following conditions:

(a) Exceeds the operating tolerance/limit for the parameter;

(b) If, in the opinion of the person making the measurement, a facility, system, or equipment failure is imminent, or may occur prior to the next scheduled maintenance activity; or

(c) If air traffic control operations are being degraded. Adjustments should not be made solely because a particular reading is not exactly the same as the standard value.

(2) If corrective **action is** performed for any of the above reasons, the action shall result in the affected parameter(s) being adjusted to the specified operating tolerance/limit as a minimum, and to the specified initial tolerance/limit to the extent practicable. In addition, whenever adjustments are made to alleviate an out-of-tolerance/limit condition, the technician shall verify that the corrective adjustments have not affected the within-tolerance/limit operation of other parameters. If certification parameters have been affected, certification is required.

82. GOVERNING DIRECTIVES. For more detailed information, refer to Orders OA 6030.5 and 6030.31D.

83.-84. RESERVED.

SECTION 2. FACILITIES MAINTENANCE PROCEDURES

85. INTRODUCTION. All Airway Facilities maintenance procedures are designed to enhance facility service availability and reliability, and to ensure system safety.

86. SCOPE. This section covers the various types and categories of maintenance **procedures** in general, supplementing other more detailed directives of reference dealing with specific facilities, systems, subsystems, or equipment.

87. MAINTENANCE. Maintenance effort is primarily directed toward failure rate reduction and minimizing unanticipated facility service outages, as well as to prevent early **wearout** in the equipment life cycle. It includes performance checks and other maintenance tasks as well as special maintenance tasks not associated with service interruption, such as tuneup, cleanup, lubrication, replacement of defective components or other offline repairs, or adjustments. Maintenance is performed on a scheduled basis in accordance with technical directives and instruction manuals governing **periodicity**, standards and tolerances, or on a nonscheduled basis as directed by line supervision, in conjunction with

operational inspections, diagnostics routines, and tests. The objectives of this effort are:

- a. Enhance reliability of the equipment.
- b. Reduce incidence of unanticipated malfunction and/or facility service outage.
- c. Extend useful life cycle of the equipment.
- d. Increase benefit to the public at less cost to the taxpayers.
- e. To insure optimum system performance, operational stability, and availability.

88. CORRECTIVE MAINTENANCE. The primary purpose of corrective maintenance is to restore a system, system element, unit, or part to normal operation from a fault condition. The objective is enhanced system service availability and maintainability. Corrective maintenance is usually performed on a nonscheduled basis. Nonscheduled corrective effort is immediately responsive to system malfunction as necessary to restore system integrity and has a direct impact on system safety and service availability. The current FAA maintenance philosophy for immediate responsiveness and restoration is simply: "replace now, repair later." Corrective maintenance decisions and actions are predicated on diagnostic/test maintenance functions, system priorities, and support demands, as well as the capabilities, options, and resources available to local maintenance manpower management. See chapter 1 of this order.

89. DIAGNOSTIC/TEST MAINTENANCE. The purpose of the diagnostic/test maintenance function is to verify normal operation in accordance with system standards and tolerances or to isolate defective components and determine the cause or source of the deficiency.

90. PERIODIC MAINTENANCE. Periodic maintenance is the maintenance activities required to be accomplished on a periodic basis--whether on a fixed, scheduled basis, or on an irregular, recurring basis, such as the tasks identified in paragraphs 93 and 94. Its purpose is to ensure top efficiency in system, subsystem, and equipment performance, to minimize unwanted interruption in service, to minimize major breakdowns, and to extend the useful life cycle of the equipment. It encompasses scheduled performance checks (i.e., activities designed to determine whether the equipment is performing properly at a given time), maintenance procedures, and other maintenance tasks. It does not include those activities required to be accomplished on a nonscheduled, incidental basis (such as in response to a detected out-of-tolerance condition, facility outage, or equipment failure). Periodic maintenance activities are applicable to each system, subsystem, and equipment.

91. SCHEDULES. The required periodic maintenance schedules for specific systems, subsystems, and equipment, which reflect the maximum permissible intervals between successive accomplishments of the listed activities, are stipulated in pertinent maintenance technical directives or instruction books.

a. If periodic maintenance cannot be performed within the specified time frame, it shall be performed at the earliest possible time thereafter with future maintenance accomplished in accordance with the original schedule.

b. Periodic maintenance not accomplished within the prescribed tolerances listed below shall be counted as missed, except as noted in paragraph c. Tolerances on time period of periodic maintenance accomplishment are:

<u>Time Period</u>	<u>Tolerance</u>
Daily	No Tolerance
Semiweekly/Twice Weekly	± 1 day
Weekly	± 3 days
Biweekly/Semimonthly	± 5 days
Monthly	± 10 days
Bimonthly	± 10 days
Quarterly	± 30 days
Semiannual	± 30 days
Annual	± 60 days
Biennial	± 90 days
Triennial	±120 days

c. When an established maintenance schedule is found to be unsuitable to meet operational requirements, a new schedule may be initiated provided that the maximum time **limit** for maintenance accomplishment from the old schedule is not exceeded.

92. GENERAL REQUIREMENTS. The following practices shall be applicable to **FAA-**maintained facilities, systems, and equipment:

a. Periodic maintenance shall be performed and logged for each activity specified in pertinent maintenance technical directives and instruction books. However, since identical periodic maintenance tasks may appear in several documents, the task need be accomplished only once.

b. Accomplishing the activities listed under any given time interval does not relieve Airway Facilities personnel of the responsibility to accomplish those activities prescribed at a more frequent interval if operational and/or environmental conditions make it necessary.

c. All periodic maintenance activities specified in published regional documents, which complement or supplement the national maintenance technical directives, shall be accomplished in a timely manner. However, these activities shall not conflict with, negate, circumvent, or lessen the effectiveness of any periodic maintenance activities specified in national documents without prior written approval from the Systems Maintenance Service.

d. When a national maintenance technical directive or a regional document does not exist to prescribe the periodic maintenance activities, the periodic maintenance activities specified in the equipment instruction books shall be accomplished in a timely manner.

93. ROUTINE MAINTENANCE. As a practical opportunity arises, Airway Facilities personnel shall accomplish the following tasks, taking appropriate action to the extent practicable, during the course of normal duties. Periodic maintenance activities forms are not required for these tasks.

- a. Determine the operational status of all equipment.
- b. Inspect parts for overheating, as evidenced by discoloration, blistering, or bulging of parts or containers, and peculiar odors.
- c. Inspect for leakage of insulating compounds, lubricants, antifreeze solutions, coolants, and pressurized fluids.
- d. Inspect for accumulations of dirt, corrosion, rust, mildew, and fungus growth.
- e. Inspect for loose mounting bolts, screws, and connections.
- f. Inspect all fuses, holders, terminal boards, and parts having threaded terminal connection to ensure good connections.
- g. Whenever possible, inspect the condition of all relays.
- h. Be on the lookout for evidence of damage, sabotage, theft, or destruction, and report as required to the appropriate supervisor.

94. OTHER MAINTENANCE REQUIREMENTS. Unless stated otherwise in applicable documents, the tasks and inspections described in this section shall be performed on all systems, subsystems, equipment, and facilities within the **NAS**. These activities shall be accomplished on a systematic basis, with appropriate corrective action taken as warranted by the conditions and findings. Activities in subparagraphs a, b, and c are to be performed as required and no activity forms are required. Periodic maintenance forms are required for activities described in subparagraph d.

a. Cleaning. The cleaning of equipment and facilities and replacement (or cleaning) of all air filters shall be scheduled by sector supervisory personnel in accordance with local conditions. Manpower savings may result if schedules of a given site are varied as a function of seasonal or environmental conditions.

b. Lubrication. Lubrication of all rotating and mechanical devices shall be in accordance with manufacturer's schedules and instructions, or as prescribed in electronic or plant equipment modifications (**EEM** or **PEM**) and maintenance directives.

c. Housekeeping. Maintenance personnel shall ensure that equipment in their charge presents a clean, well-ordered professional appearance at all times. All equipment storage and work rooms shall be kept clean, with supplies and working equipment stored in a neat and orderly manner.

d. Moistureproofing of Radio-Frequency (RF) Cables. Unless specified otherwise in applicable documents, **rf** cables, connectors and terminations shall be inspected and repaired (if required) at least annually at all air traffic control,

radar, communications, and air navigational aid ground facilities. Schedules shall be established locally depending on local conditions, usually at the beginning of winter and/or rainy seasons. In addition to these requirements, moistureproofing shall be accomplished after any repair work or upon becoming aware of a possible or potential moistureproofing problem. See paragraph 186 for instructions.

95. MODIFICATIONS TO FACILITIES' SYSTEMS, SUBSYSTEMS' AND EQUIPMENT.

Modifications to ground facilities, systems, subsystems, equipment, including associated monitor and test equipment, structures, and buildings, shall be authorized only to correct deficiencies, satisfy changing requirements, improve performance, increase reliability, minimize or eliminate safety hazards, reduce manpower requirements, facilitate maintenance, save money, or enable commissioning. All modifications, except emergency modifications, shall be implemented only when authorized in writing by appropriate documentation issued by the proper personnel; emergency modifications may be verbally authorized but shall be documented within five days of approval. Authorized modifications shall be considered priority projects and shall be accomplished expeditiously. Temporary modifications shall be removed as soon as practicable. Unauthorized modifications are expressly prohibited and shall be removed promptly. Guidance on agency modification policy and procedures is contained in Orders 1320.33B, 1800.8E, and 6032.1A.

96. WAIVERS/NCP's. When conditions preclude maintenance according to established criteria or procedures, the cognizant sector shall initiate an Airway Facilities Waiver Request, FAA Form 6000-3, in accordance with Order 6000.20B or NAS Change Proposal, FAA Form 1800-2, per Order 1800.8E if hardware/software or documentation under configuration management is modified. See chapter 2 of this order.

97. MOBILE FACILITIES PROGRAM. The FAA requires adequate mobile units to meet emergency or special event requirements, replace facilities destroyed by natural or manmade disaster, support scheduled maintenance and modernization programs, and/or establish temporary service at locations **qualifying for** facilities where lack of a facility would adversely affect flight safety.

a. **Management of Mobile Facilities.** The Aeronautical Center is the OPR for the mobile facility program. Order 6030.18B, Mobile Air Traffic Control, Navigational Aid, Communications and Power System, provides more detailed information relative to the overall program management of mobile facilities.

b. **Maintenance.** Maintenance of mobile facilities is the responsibility of the organizational element having custody. Airway Facilities personnel shall be cognizant of their duties and responsibilities in the deployment, installation, maintenance, and operation of mobile air traffic control, navigational aids, communications, and **power** systems. Detailed guidance is contained in Order 6030.18B; Order 6700.16, Maintenance of Mobile VHF **Omnirange** Facilities; and individual maintenance technical handbooks.

98. ONSITE REPAIRS AND CALIBRATIONS.

a. **Repair of Modular Assemblies.** The repair of printed- circuit boards and other miniaturized integrated circuit assemblies shall be made in accordance with chapter 4, which states, in essence, that printed-circuit boards and other

assemblies should be repaired in the field to the extent practicable. Factors to be considered include:

- (1) Availability of special tools and equipment that might be needed.
- (2) Extent of the training that the technician has had.
- (3) Proficiency of the technician in making repairs of this type.
- (4) Time required to effect repairs.
- (5) Availability of depot or other outside repair facilities.
- (6) Whether or not the assembly is classified as an Exchange and Repair (E&R) item. The E&R program should be used only when necessary.
- (7) New NAS deliveries with field repair to the lowest repairable unit (LRU).

b. Repair and Calibration of Test Equipment. Test equipment shall be maintained in proper operating condition. General guidelines regarding calibration and repair of test equipment are contained in Order 6200.4E, Test Equipment Management Handbook.

c. Repair of Equipment Under Warranty. Airway Facilities personnel shall not attempt to repair assemblies or components in equipment under warranty when such items are normally replaced as units, unless required to return a critically needed facility to service. When there is a critical need to return the facility to service, field repair of failed printed-circuit boards in equipment under warranty may be made where the technical capability exists to isolate the fault and effect repairs. Failed or defective component parts on printed-circuit boards shall be reported in accordance with Order 4650.20A. Where repairs exceed the technical capability of field personnel, the printed-circuit board itself shall be reported as failed, per Order 4650.20A, and a replacement requisitioned from the FAA Logistics Center. Also see paragraph 107 and chapter 4 of this order.

99. MAINTENANCE OF NONCOMMISSIONED FACILITIES, SYSTEMS, SUBSYSTEMS, AND EQUIPMENT. During tests, modernization, relocations, and operational readiness demonstrations, when a noncommissioned status exists on the airway facility, subsystems, and systems concerned:

a. Such equipment shall be maintained to the standards of commissioned equipment to the extent practicable to prevent derogation of quality and capability.

b. Custodial maintenance shall be performed to the extent practicable and as the workload permits.

c. The facility, system, subsystem, or equipment may be removed from service at any time without a NOTAM; however, prior coordination with Air Traffic personnel may be appropriate.

d. Identification signals shall not be broadcast by a noncommissioned facility.

100. MAINTENANCE OF AIR TRAFFIC TRAINING EQUIPMENT. It is the policy of the Airway Facilities organization to cooperate to the extent practical in 'maintaining approved training aids, both electronic and mechanical, used by Air Traffic personnel at field locations such as towers, centers, and **FSS** facilities. Directives and procedures covering specific items of equipment are issued by the Washington and/or regional offices.

101. MAINTENANCE OF JOINT-USE MILITARY EQUIPMENT. The ground rules for Tactical Air Command (**TAC**) and FAA joint use of radar facilities and the minutes of the Joint Radar Planning Group (**JRPG**) meetings govern the **TAC** and FAA. The FAA Washington office will, when required, issue directives to its field organizations to implement FAA **JRPG** commitments. Since the FAA has the legal responsibility for the accuracy of the equipment used in air navigation and air traffic control systems, with all its implications, before boards of inquiry and the courts, the FAA shall determine the technical level and method of accomplishment of maintenance by its personnel. Reference shall be made to Order **AF 6430.49**, Ground Rules for Air Defense Command and **CAA** Joint Use of Radar Facilities, and minutes to the **JRPG** meetings for further details as to maintenance and operational requirements at joint-use radar facilities.

102. SERVICE INTERRUPTION FOR MAINTENANCE. Maintenance should be accomplished, to the extent practicable, on the offline operating equipment. When necessary to perform maintenance on the online operating equipment, it shall be coordinated with the appropriate personnel (Air Traffic, military, etc.) and accomplished with minimum interference to facility operation. See chapter 5 of this order for procedures.

103. AIRCRAFT ACCIDENT ACTION.

a. The data on technical performance record forms and facility logs are of prime concern and legal importance during aircraft accident investigations. Order **8020.11** contains detailed instructions on the responsibilities of Airway Facilities personnel in the event of an aircraft accident or incident.

b. Order 8020.11 tasks the Airway Facilities sector manager with developing and publishing the procedures sector personnel will follow in the event of an aircraft accident or incident. This effort shall consist of a plainly marked document, prepared in advance, and readily available to facility personnel when needed. Information for the content of the document will be found in Order **8020.11**. The responsibility for the document rests with the sector manager, but the preparation may be delegated to the facility first-level supervisor.

c. A factual report of the operational status of any facility that may have been involved in an aircraft accident shall be entered in the appropriate facility maintenance log. The technician and any observer(s) shall initial each entry and include the certification statement as prescribed in Order **8020.11**. The accident entry pages shall be closed with a page break after the entries are complete.

d. Instructions regarding detailed action requirements for specific systems, subsystems, and equipment are published in applicable maintenance technical directives.

104. PRESERVATION OF NATIONAL ENVIRONMENT AND RESOURCES. Airway Facilities personnel shall ensure that, insofar as practicable, all maintenance operations shall promote the prevention, control and abatement of air and water pollution, and shall use techniques for the disposal or discharge of waste and radioactivity that are consistent with the national effort. Order 1050.10A, Prevention, Control, and Abatement of Environmental Pollution at FAA Facilities, outlines the basic agency policies, plans, and responsibilities that will enable the FAA to fulfill its obligations in this area.

105. LOGISTICS. It is agency policy before a new system, subsystem, or equipment is introduced into the National Airspace System, that (1) pertinent operational requirements are established, (2) a maintenance concept is developed, (3) a logistic support plan is formulated, and (4) life-cycle years are established. The Systems Maintenance Service develops a maintenance program in support of the stated operational requirements of the system. Through coordination with the FAA Logistics Center (depot) and the Logistics Service throughout the provisioning cycle and by participation in provisioning conferences, the Systems Maintenance Service endeavors to ensure adequate and timely depot and onsite support of all systems, subsystems, and equipment as they are introduced. The FAA Logistics Center is responsible for providing logistic support to meet the operational requirements of any system used in the National Airspace System. However, selected NAS plan projects provide contractor life cycle support. Initial Supply Support Allowance Charts (ISSAC) are developed for each type of system, subsystem, and equipment. Subsequent supply requirements, as they develop, are furnished upon demand by submission of a requisition to the depot in accordance with Order 4250.9A, Field Inventory Management and Replenishment Handbook. Field logistic operations such as Exchange and Repair (E&R), Repair and Return (R&R), packing, marking and shipping, inventory control, and replenishment, are covered in Order 4250.9A.

106. SHIPMENT OF EQUIPMENT.

a. Packing. Equipment packed for shipment to another location or to a depot shall be packed such that it will not be damaged in transit. The equipment should be checked for heavy components, such as transformers or motors, that may need additional bracing or support to avoid damage in the event the container is dropped during handling. In some cases, it may be necessary to remove such items and pack them separately.

b. Items to be Included. The following items shall be included as appropriate with equipment being shipped:

- (1) Instruction books
- (2) Spare parts
- (3) Cables and accessory items furnished with the equipment
- (4) Modification records

(5) Any parts or assemblies removed for reasons other than an **agency-**wide modification. This would include any item removed to satisfy conditions unique to one facility but that may be needed if the equipment should be installed at another facility. A typical example would be a blower that is removed if the facility has air conditioning, but not if it does not.

(6) Modification kits on hand shall be installed before the equipment is transferred.

(7) Other necessary records.

c. Packing List. Each individual shipping container, or one container of each shipment, **shall** contain a packing list showing in detail a complete description and quantities of each item in the shipment. When the packing list is enclosed in one container of the group, that container shall be clearly marked "PACKING LIST INSIDE." It is also permissible to place the packing list in a heavy envelope marked "PACKING LIST," and securely fasten it to one of the containers.

d. Marking. Each shipping container shall be marked to allow identification of contents without unpacking.

107. EQUIPMENT W-TIES.

a. Background. Some new equipment introduced into the **NAS** through Facilities and Equipment programs are covered by a warranty (or guarantee) clause. The terms of the warranty can usually be found in the **forepart** of the equipment instruction book. Warranties on such equipment normally run for 2 years from the date of factory acceptance or 1 year from the date of first use by FAA, whichever occurs first. Items of test equipment are normally covered by a commercial warranty. The terms and duration of commercial warranties vary between individual manufacturers. Some items furnished through the FAA Logistics Center, such as vacuum tubes, may also be warranted, and the warranty information is often printed on the item itself. In other cases of warranted items furnished by the depot, warranty information is printed on the shipping container.

b. Action Required. Airway Facilities personnel shall identify items and equipment under their purview that are in warranty, and comply with the provisions of Order **4650.20A**. Failure to report failures which occur during the warranty period may affect **FAA's** entitlement for repair or replacement by the contractor or manufacturer, and may also mask design deficiencies.

108.-109. RESERVED.

SECTION 3. INSPECTIONS

110. TECHNICAL INSPECTIONS. Facility inspections, objectively conducted, are an important part of the overall maintenance evaluation system.. They are one of the more effective management controls for ensuring the required quality level of maintenance work, and of system, subsystem, and equipment performance.

a. Routine Inspection. Technicians and others engaged in regular maintenance activities, as well as their immediate supervisors, are expected to inspect equipment, subsystem, and system performance as part of their normal routine duties. They should refer to this order and the appropriate maintenance technical directives for detailed technical guidance.

b. Periodic Formal Inspections. A periodic formal inspection is a systematic **onsite** inspection of air navigation, air traffic control, and communications facilities, support equipment, and structures and grounds, conducted on a scheduled, recurring basis and requiring a formal report. These inspections are usually accomplished by regional staff personnel **or** sector technical personnel who are not directly responsible for the accomplishment or supervision of day-to-day maintenance of the facility being inspected. The established guidelines in terms of objectives and requirements for conducting periodic formal inspection are contained in Order 6040.6C, Airway Facilities Technical Inspection Program, and regional directives.

(1) Key Performance Parameters (or Key Inspection Elements). Certain parameters are considered critical indicators of whether the system, subsystem, or equipment is performing its intended function and being maintained properly. These key performance parameters, or key inspection elements, are identified in the chapter on standards and tolerances in maintenance technical directives by an arrow placed to the left of the item. Determination of the extent of measurements made to establish whether the system, subsystem, or equipment is performing its intended function and being properly maintained rests upon the judgement and competence of the inspector. If an examination of the key performance parameters, or a review of the factors, indicates a possible equipment malfunction or maladjustment, the inspector should perform whatever additional analysis is necessary to arrive at a definite conclusion.

(2) Reports. The results of formal inspections shall be set forth in a written report. Inspectors shall comply with instructions published by Systems Maintenance Service and regional directives concerning such matters as report format, use of forms, reports distribution, and responsibility for issuing directed actions or for taking corrective and **followup** action.

111. JOINT ACCEPTANCE INSPECTION (JAI). Projects to establish, relocate, and improve **NAS** facilities require the involvement and participation of several FAA offices with different responsibilities. **JAI's** are conducted to gain the consensus of the involved offices that the projects have been completed in accordance with applicable standards and specifications and the facilities are capable of providing the services required within established standards and tolerances. The Joint Acceptance Board is composed by representatives of the Airway Facilities, Logistics, Flight Standards, and Air Traffic organizations, as appropriate, as well as other agency organizations that may have a functional interest. Refer to Order 6030.45 for detailed requirements on conducting a JAI.

112. FLIGHT INSPECTIONS.

a. Introduction. The information contained in this paragraph is general in nature and applicable to most facility **types**. Detailed maintenance information as related to flight inspection of specific types of systems, subsystems, or equipment is found in the flight inspection chapter of the maintenance technical

directive(s) for that system, subsystem, or equipment. In addition, because the flight inspection of a system, subsystem, or equipment is a coordinated effort between Airway Facilities and Flight Inspection Field Office personnel, Airway Facilities personnel shall familiarize themselves with detailed information as published in handbook OA P 8200.1, United States Standard Flight Inspection Manual.

b. Maintenance Performed before Flight Inspection.

(1) If time permits, the system, subsystem, or equipment may be ground checked to be sure there have been no undesirable changes. When both sets of equipment are operative (i.e., two channels are available) and an advance shutdown can be obtained, the functioning of one set of equipment may be checked to determine the possible need for nonroutine maintenance. Simple things may be corrected, but no attempt shall be made to perform tasks that may result in an improved performance that is not representative of the day-to-day operation, or in a delay or postponement of the flight inspection, unless such work is deemed absolutely necessary. The equipment serviced must be ground checked following test or changes. The position shall not be taken, however, that the flight inspection can be postponed to perform day-to-day routine maintenance work such as tube replacement.

(2) If there is a legitimate problem, the Airway Facilities personnel are encouraged to discuss it with flight inspection personnel. Flight inspection personnel will often find it possible to accommodate any reasonable request for a delay and can use the time to good advantage in flight inspecting other facilities.

c. Flight Inspection Participation. Maintenance personnel at the facility during flight inspection shall be prepared to correct any observed discrepancy immediately, when possible, as discussed in handbook OA P 8200.1.

(1) Observed Discrepancies. Flight inspection personnel will so indicate in the flight inspection report when discrepancies are corrected during flight inspection. When it is impossible to correct a discrepancy while the flight inspection is in progress, Airway Facilities personnel will inform flight inspection personnel. When discrepancies are not corrected before the inspection is completed, Airway Facilities personnel shall take immediate action to correct and, immediately following correction, shall request another flight inspection if appropriate. A report of the discrepancies noted during the flight inspection shall be submitted to the immediate AF supervisor.

(2) Adjusting for Abnormalities. Occasionally, it is necessary to make adjustments to ground equipment that may appear to be abnormal on the basis of previous operational adjustments, or that may exceed tolerances. The need for such adjustments may be due to maladjustments elsewhere in the ground equipment, a change in terrain, reflections, defective airborne equipment, or other factors.

(a) It shall be the responsibility of Airway Facilities personnel to observe equipment performance during the flight inspection in order that they may be aware when tolerances are being exceeded or abnormal adjustments are required to satisfy flight inspection. Airway Facilities personnel shall be alert

to the possibility that other component maladjustments or malfunctions may be the cause of the abnormality.

(b) If measurements made with approved test equipment do not agree with the measurements reported by flight inspection personnel, the flight inspection personnel should be advised and requested to **doublecheck** their measurements, using their standby equipment. If no agreement is attained with the standby equipment, the flight inspection measurements shall govern and a report of the discrepancy submitted to the immediate **AF** supervisor.

(3) Adjustments Beyond Equipment Tolerances.

(a) Where it is necessary to exceed equipment tolerances to meet flight inspection requirements, the maintenance supervisor shall be notified immediately. The supervisor shall determine whether the variance is sufficiently severe to require immediate investigation or whether the investigation can be deferred.

(b) **Pending** this determination, if it cannot be made prior to departure of the flight inspection aircraft, the system, subsystem, or equipment shall be continued in service provided that:

1 The stability of performance and system/subsystem/equipment flight **characteristics** have not been impaired to the extent that they may be hazardous to users.

2 Flight inspection personnel concur in continued operation.

3 The maximum rating of equipment is not exceeded.

(c) The maintenance supervisor shall be contacted at the earliest possible moment and shall be fully informed of existing conditions. The final determination of the system, subsystem, or equipment performance will be the responsibility of the technician in charge. Under no circumstances will the system, subsystem, or equipment be continued in operation when flight inspection has determined it to be unsatisfactory for use. However, in the case of radars, Air Traffic personnel may wish to continue operation of the radar for a short period of time to permit easier transition to **nonradar** procedures.

d. Post-Flight Inspection Actions. Upon completion of the flight inspection, Airway Facilities personnel shall accomplish the following actions:

(1) Record meter readings or other data affected by the adjustment, correction, or equipment change, if any were made, or if the equipment was changed during flight inspection.

(2) Make available to flight inspection personnel all pertinent system, subsystem, and equipment parameters needed to complete the flight inspection report, such as transmitter power, or receiver sensitivity.

(3) Discuss with flight inspection personnel any problems encountered during the flight inspection.

e. Readjustment of System Monitor(s) Following Flight Inspection.

Paragraph 106.35 of handbook OA P 8200.1 provides that during periodic surveillance and certain special flight inspections, the flight inspection will not normally request adjustment to a facility that is operating within prescribed tolerances. Facility operation within prescribed flight inspection tolerances does not in itself imply that the facility parameters are at the center of their allowable range. Therefore, it is very important that Airway Facilities personnel avoid recentering the system monitor(s) or the establishment of revised reference curves based on facility parameters that are found acceptable by flight inspection but are not necessarily at their optimum values. This will prevent unwarranted **"following"** of facility parameters and ensure monitor sampling of existing conditions.

113.-114. RESERVED.

CHAPTER 4. FIELD REPAIR OF EQUIPMENT

115. INTRODUCTION. This chapter contains basic guidance governing the field repair of equipment used in FAA's system of aids to air navigation, traffic control, communications, and related supporting ancillary facilities. It supplements information contained in Order 6000.18, Field Repair of Equipment, and is intended to provide guidance in instances where:

a. More specific guidance is deemed appropriate for particular situations or circumstances.

b. Exceptions to the basic guidance are necessary because of economic considerations or budgetary limitations.

c. Supply support levels for certain facilities impact upon field level repair response time.

116. BACKGROUND. An analysis of the transactions and repair work accomplished under the Exchange and Repair (E&R) program at the FAA Logistics Center indicates that many of the repairs could have been readily and more economically accomplished by Airway Facilities technicians at the requisitioning facility or elsewhere within the sector. Parts required for repairs could have been taken from site stock, purchased locally in accordance with Order 4650.12B, Local Purchase, or requisitioned from the FAA Logistics Center.

117. OBJECTIVES. Agency objectives are to promote the repair of equipment at the field level. This applies to both expendable and Exchange and Repair (E&R) items. Expendable items are not to be automatically discarded without attempting reasonable repairs, even though the initial cost of the items is low. The designation of an item as E&R does not preclude onsite repair effort.

118. AF SECTOR ACTION. The sector manager shall take action to ensure that no equipment unit or subassembly that can be satisfactorily and economically repaired in the field is sent to the FAA Logistics Center for servicing, provided that the item involved can be removed from service without first having a serviceable replacement on hand.

a. For items that can be removed from service without first having a serviceable replacement on hand, the method of repair shall be determined using the following criteria:

(1) Repair onsite by Airway Facilities personnel, using parts from station stock, local purchase, or requisitioned from the FAA Logistics Center, unless such repairs are beyond the technical capability of sector personnel, or suitable tools or test equipment are unavailable.

(2) Accomplish repairs using local vendors; first, those with current repair contracts administered by the FAA Logistics Center, and second, where economically feasible, local vendors without a current contract.

(3) Repair at the FAA Logistics Center (depot) when the equipment is subject to the provisions of Order 4620.1, Scheduled Overhaul of Ground Facilities

Equipments, and must be referred to the depot when major repair or overhaul is involved.

NOTE: Items that have failed within the warranty period must be reported in accordance with Order 4650.20A. Also see paragraphs 98c and 107.

b. Equipment that cannot be repaired by any of the above methods following application of the above criteria, will be replaced by the FAA Logistics Center or returned by an Exchange and Repair (E&R) or Repair and Return (R&R) transaction, as appropriate, in accordance with procedures contained in Order 4250.9A. R&R transactions required by a field facility shall be coordinated with the FAA Logistics Center prior to shipments.

c. All equipment returned to the FAA Logistics Center for E&R or R&R must be accompanied by:

(1) An Airway Facilities Modification Record (FAA Form 6032-1) in accordance with procedures contained in Order 6032.1A.

(2) A sufficiently detailed description of defects and problems, and repairs attempted, to permit depot personnel to determine the work necessary to restore the item to serviceable condition.

d. Additional guidance and/or exceptions to paragraphs and for repair of specific equipment is provided in Chapter 2, Administrative Management.

e. Decisions concerning supply support levels for specific equipment are provided in Chapter 3, General Technical Maintenance Procedures and Criteria.

119. REGIONAL ACTION. The regions shall ensure that sectors do not utilize FAA Logistics Center items that the sector can repair with resources available locally, and that a repair capability is established at the facilities concerned.

a. Test equipment at the facility should have been provided in accordance with standards established by Order 6200.4E.

b. Adequate working equipment must be available at the facility, in accordance with standards established by Order 4630.2A, Standard Allowance of Supplies and Working Equipment for National Airspace System Facilities.

c. A site stock of replacement parts and components should be available at the facility in accordance with Order 4620.3C, Initial Support for New or Modified Equipment Installation.

d. Personnel training has been received or is scheduled in accordance with established training programs.

120. HEADQUARTERS ACTION. Headquarters will arrange for procurement of the repair and test equipment, arrange training, and furnish necessary documentation, including directives, as required.

121.-122. RESERVED.

CHAPTER 5. SERVICE INTERRUPTION, RESTORATION, AND CERTIFICATION

SECTION 1. GENERAL

123. INTRODUCTION. This chapter prescribes the Airway Facilities certification policy as related to commissioned FAA facilities, systems, services, and equipment; and the associated shutdown, interruptions, and restoration of same. Maximum availability is of prime importance to the users of Airway Facilities systems, services, and equipment. Accordingly, equipment downtime must be kept to a minimum. Coordination with the user before a scheduled downtime and prompt notification of unscheduled interruptions are equally important. The intent of both is to minimize the impact of a facility or service loss in the air traffic environment.

124. OPERATIONAL STATUS, NOTICES TO AIRMEN (NOTAMS). Air Traffic personnel are responsible for dissemination of NOTAMS and shall be kept currently advised of the operational status of all systems, subsystems, facilities, and equipment. Any interruption or change in the performance characteristics that would, in the judgment of the technician, adversely affect service to the user shall be reported to Air Traffic personnel for possible NOTAM or other appropriate Air Traffic action. Appropriate security precaution shall be taken when reporting any change to operational status of joint-use radars. The sector manager or designee shall review NOTAMS and the Airman's Information Manual to determine whether facility status is properly reported and correctly described. The manager of the appropriate Air Traffic facility shall be notified immediately of any discrepancy so that appropriate action may be taken.

125. SCHEDULED SHUTDOWNS. The appropriate Air Traffic facility (en route or terminal) is responsible, except as noted in chapter 5, section 2, for providing final approval of scheduled shutdowns for all equipment. Requests for shutdowns should be made by telephone, interphone, or message indicating the desired time of shutdown, probable duration, and reason.

126. INTERRUPTIONS DURING FLIGHT INSPECTIONS. For VHF omnidirectional range (VOR)/VHF omnidirectional range tactical air navigation (VORTAC) flight checks, flight inspectors will notify Air Traffic personnel of the pending flight inspection and the time during which transmitter changes will be effected. (See OA P 8200.1, United States Standard Flight Inspection Manual.) No notification will be required of maintenance personnel for transmitter changes during the flight inspection. However, if it is found that adjustments are necessary that require shutdown of any type of facility (i.e., instrument landing system (ILS), VHF omnidirectional range (VOR), or homing radio beacon (H)), maintenance personnel shall advise the appropriate Air Traffic personnel so that they may take NOTAM action.

127. MOMENTARY INTERRUPTIONS. Any interruption of a system, subsystem, or equipment can be a potential cause of distrust on the part of the users. Switching of operating equipment must never be done indiscriminately. Whenever possible, navigational and landing aids, communications, and data handling equipment shall be switched by and coordinated with appropriate personnel. Complex switching operations shall be done by Airway Facilities personnel, after coordination with others as required.

128. MINOR EQUIPMENT ADJUSTMENTS. Minor adjustments to operating equipment may be performed without removing the equipment from service, providing the technician is confident that the adjustments will not result in placing one or more parameters beyond published operating tolerances/limits, or causing, confusing, or disturbing indications to aircraft or controllers or an interruption to the service being provided. For example, a maintenance technical directive may authorize a temporary reduction of power output to check the power monitor alarm, providing the power output is not reduced below the minimum power level stated in the operating tolerance for the power monitor and that a momentary change of alarm status is not indicated at the control point.

129. FACILITY RESTORATION. The urgency of restoration of a facility will be determined by the needs of the users and the impact that its absence will have on them. A comprehensive system of defining the urgency of restoration has been established by the scale of "**restoration levels**", Each facility has an assigned restoration level commensurate with the operational requirements placed on it. (See Order **6030.31D**, Restoration of Operational Facilities.)

130. PRIORITIES OF RESTORATION. The sector manager or designee shall establish priorities for restoration of out-of-service facilities for delayed responses, e.g., **A(1)** and **A(2)**, when the loss of-service does not impose an unreasonable impact on users or compromise the safe and effective performance of the **NAS**. However, Air Traffic has the responsibility for determining priority of restoration where two or more facilities, systems, subsystems, or equipment are inoperative at the same time. In such cases, and when maintenance resources for restoration cannot be applied to all equipment, a priority of restoration shall be requested from the appropriate Air Traffic facility using the procedure outlined in chapter **5**, section **3**. Military requirements must be taken into consideration in cases involving joint-use radars.

131. CERTIFICATION. Systems, services, and equipment certification shall be performed according to chapter **5**, section **4** on facilities and services with this requirement (as listed in appendix **3**). It shall be accomplished prior to commissioning and periodically thereafter in accordance with applicable maintenance handbooks. Certification shall also be performed following an aircraft accident or incident (as outlined in Order **8020.11**), and prior to restoration after the following:

- a. An interruption caused by or affecting a certification parameter. Recertification is not required when a facility/system with internal monitoring and auto-reset or operator-initiated reset returns to service, and no other action other than the reset was taken.
- b. Removal of certification due to system derogation.
- c. The maximum certification interval has been exceeded.
- d. Any maintenance activity affecting a certification parameter.

132. GOVERNING DIRECTIVES. For additional information and further details, refer to Orders **OA P 8200.1; 7930.2C**, Notices to Airmen (NOTAMS); **7210.3I**; and other pertinent directives listed in appendix 5 of this order.

133.-134. RESERVED.

SECTION 2. SERVICE INTERRUPTION AND SHUTDOWN PROCEDURES

135. INTRODUCTION. Technical maintenance directives establish periodic maintenance schedules and procedures that, at times, require shutdown of a facility, system, subsystem, or equipment with corresponding loss of service to the user. The ultimate purpose of the periodic maintenance program is to minimize the unexpected loss of service to the user. For this reason, an aggressive periodic maintenance program is in operation in all regions.

136. SHUTDOWN SCHEDULING PROCEDURE. Where required to ensure accomplishment of periodic maintenance on a timely basis, the **AF** sector will develop a monthly shutdown schedule on a terminal or en route area basis. Schedules shall be fully coordinated with, and approved in advance by, the appropriate Air Traffic facility manager. Once approved, schedules shall be distributed to, and rigidly followed by, all concerned insofar as possible. Justification for deviating from an approved shutdown schedule shall be recorded in appropriate AT and **AF** logs.

a. En Route. Requests for authority to shut down en route equipment shall be directed to the **AF** sector manager (**SM**) or designee at the **ARTCC** concerned. The **AF** sector manager (**SM**) or designee will coordinate the request with appropriate Air Traffic control personnel, obtain approval or justification for refusal, and advise the **AF** technician of the results.

b. Terminal. Requests for authority to shut down terminal equipment shall be directed to the manager or designee of the concerned AT manned facility. The manager or designee will approve the request or provide justification for refusal. After normal duty hours of a terminal facility, coordination will be made with the controlling AT facility.

c. Joint-Use Radars. Special coordination procedures with the military have been established by the Joint Radar Planning Group and shall apply.

137. ADVANCE NOTIFICATION. The Air Traffic facility shall be notified on the day preceding a scheduled shutdown, if possible, to allow sufficient time for publication of a **NOTAM**, rerouting of air traffic, and other activities. Routine shutdowns are to be advertised by **NOTAM** at least 5 hours in advance of the shutdowns.

138. UNSCHEDULED AND EMERGENCY SHUTDOWNS. An unscheduled shutdown for either emergency or periodic maintenance is one that is necessary to prevent failure or damage to the facility or any essential portion thereof. Whenever possible, at least 1 hour advance notice shall be given to the AT facility so that appropriate action can be taken. In case of impending catastrophic failure, the responsible technician shall shut down the facility and take appropriate **followup** action.

139. OUT-OF-TOLERANCE SHUTDOWNS. The AT personnel are responsible for approving scheduled shutdowns as outlined in chapter 5, section 1. Out-of-tolerance shutdowns are not in the scheduled shutdown category. The condition of a facility or essential system, subsystem, or equipment may be so serious as to provide erroneous information to the user.

a. General. When the technician charged with the maintenance responsibility for the equipment finds a condition that cannot be immediately corrected, he/she shall remove it from service after giving the appropriate AT facility an opportunity to reroute traffic, unless the severity of the condition of the equipment makes this delay impracticable. (See paragraph 161 for partial certification.)

b. Radar. When radar service is deteriorated below standards, certification shall be removed and Air Traffic advised of the condition of the system, subsystem, or equipment. A maintenance shutdown shall be requested and an estimate of the time required to recertify the radar service shall be provided. Air Traffic personnel will decide whether or not to continue using the uncertified radar service. An appropriate entry shall be made in the appropriate Facility Maintenance Log describing the situation, including names of personnel contacted. In the case of joint-use radar facilities, special coordination procedures with the military have been established by the Joint Radar Planning Group (JRPG) and shall apply as appropriate.

140. AIRCRAFT REPORTED FACILITY MALFUNCTIONS. When a report of a navigational aid facility malfunction is received from an aircraft, Air Traffic personnel will request a facility check from a second aircraft. If Air Traffic personnel cannot obtain a report from a second aircraft within 30 minutes, AF personnel will initiate action to investigate the pilot report. If the second aircraft reports normal operation, the incident is recorded by Air Traffic personnel with no maintenance action. If the second aircraft confirms the malfunction, the following steps should be taken:

a. Standby Equipment Available.

(1) Air Traffic personnel will select standby equipment.

(2) If operation is reported normal on standby equipment, facility operation is continued and Air Traffic personnel will notify Airway Facilities personnel.

(3) Should the malfunction continue or if the standby equipment cannot be selected, Airway Facilities personnel will be notified by Air Traffic personnel and a joint decision will be made regarding continued facility operation.

b. No Standby Equipment Available. Air Traffic personnel will notify Airway Facilities personnel, and a joint decision will be made regarding continued facility operation.

c. Maintenance Action.

(1) Inspect the ground facility equipment, perform a standard ground check (if applicable), and correct the fault if one exists.

(2) Certify the facility service. If necessary, flight inspection should check the facility prior to certification and restoration.

(3) Notify Air Traffic personnel of all pertinent facts concerning facility restoration and make entries in the facility log in accordance with existing instructions.

(4) All maintenance activities shall be in accordance with the level of restoration established by the regional office for the particular facility involved.

141. SHUTDOWN APPROVAL REFUSED. It is incumbent upon AT and AF field personnel to maintain a spirit of cooperation regarding maintenance shutdown of facilities. Further, an aggressive periodic maintenance schedule will do much to solidify this cooperation. However, in the event maintenance activities are seriously hampered by repeated refusal to approve shutdowns, this shall be reported via official channels. The report shall contain all pertinent information with accurate documentation. Every effort shall be made at the local level to work out differences prior to submitting any problem of this nature to the next level for resolution. When the scheduled shutdown cannot be accomplished and the maximum certification interval is exceeded, the responsible technician must remove certification of the facility by making an appropriate entry in the Facility Maintenance Log and informing the appropriate AT supervisor of the action taken, reporting that the facility in question is operating in uncertified status. This action shall be taken only after proper advance notification to the AT supervisor having approval authority for shutdown. See section 4 of this chapter.

142. AF SHUTDOWN PROCEDURE. Notify AT personnel to issue a NOTAM for the facility that will be shutdown for maintenance, stating time, date, facility type, identification location, and estimated downtime period.

143. REMOVAL OF IDENTIFICATION. On those systems having identification signals, the identification signal shall be removed during any maintenance activities that may affect system operation. This signifies to the user that equipment adjustments are being accomplished and the system may be unreliable.

144. MOMENTARY INTERRUPTIONS TO EQUIPMENT OPERATION. Before routinely changing equipment or performing any other operation to a facility, which, due to momentary interruption of the service, might cause confusion to users, notice shall be given to the AT personnel monitoring the facility that equipment transfers, line patching, or other adjustments are about to be made. Such switching or changeovers SHALL NOT BE ACCOMPLISHED until Air Traffic personnel concur with such action. At facilities with only commercial long distance telephone for communications, the AF technician shall coordinate with the using or control facility for approval of equipment transfer for specified services during a predetermined period. At the end of the specific period or conclusion of the work, the technician shall notify the control facility or coordinate an extension of the work period.

145. SERVICE INTERRUPTIONS. Unanticipated shutdowns are known as service interruptions. Service interruptions shall be reported immediately to the nearest appropriate Air Traffic facility. The reports shall normally be initiated by the technician responsible for maintenance of the facility. However, any AF employee

at the scene, or having firsthand knowledge of a sudden, unscheduled interruption, is obliged to report the incident to the nearest **AF** or AT facility. **Any AF** facility receiving the report is responsible for ensuring that the information is channeled into appropriate AT and **AF** offices immediately for **followup** action.

146. GOVERNING DIRECTIVES. For additional information and further details, refer to Orders OA P 8200.1, 7930.2C, 7210.3I, and other relevant directives listed in appendix 5 of this order.

147.-148. RESERVED.

SECTION 3. FACILITY RESTORATION

149. INTRODUCTION. Facility availability is of prime importance in the timely and safe operation and control of air traffic. In establishing response times, consideration must be given to the extent of delay that can be tolerated. This has to be determined for each facility on an individual basis. The criteria applied in each case is based on ~~the~~ unique operational requirements of each facility.

150. REGIONAL ACTION. Regions shall establish and continue to designate the necessary level of restoration response for each location in accordance with Order 6030.31D.

151. GOVERNING DIRECTIVES. For details on facility restoration following a failure or out-of-tolerance condition, refer to Orders 3600.6, Workweeks and Hours of Duty, 3400.3E, Airway Facilities Maintenance Personnel Certification Program, OA 6030.5, 7930.2C, 6030.31D, and other relevant directives listed in appendix 5 of this order.

152.-153. RESERVED.

SECTION 4. CERTIFICATION OF SYSTEMS, SERVICES, AND EQUIPMENT

154. INTRODUCTION. This section establishes FAA requirements for certification of FAA maintained systems and equipment providing services for Air Traffic and system users.

155. CERTIFICATION CRITERIA.

a. FAA national airspace systems, subsystems, services, and equipment directly affecting the flying public (as listed in appendix 3) shall be certified when they:

(1) Provide moment-by-moment positional information to pilots or Air Traffic personnel during aircraft operations.

(2) Provide necessary communication or communication control between pilots and Air Traffic personnel during the above aircraft operations.

(3) Provide essential and critical power conditioning equal to or greater than 80 kilowatts and provide continuous conditioned power.

(4) Provide essential meteorological information for takeoff and landing aircraft at airports. Facilities included in this category are:

- (a) Altimeter setting indicator (ASI/DASI).
- (b) Automatic Terminal Information Service (ATIS)
- (c) Rotating beam ceilometer (RBC).
- (d) Remote readout hygrothermometer (RRH).
- (e) Runway visual range (RVR).
- (f) Transcribed weather broadcast (TWEB).
- (g) Low level windshear alert system (LLWAS)

b. Supportive, intermediate, and weather systems of an advisory nature shall not be certified. This category shall include systems used exclusively by Airway Facilities for maintenance support activities such as the maintenance processing system (MPS) and the systems maintenance monitor console (SMMC).

(1) Examples of supportive facilities are power conditioning systems (PCS) except those of paragraph 155a(3) above, and electrical distribution systems (ELD).

(2) Examples of intermediate facilities are radio communications links (RCL), television microwave links (TML), and data multiplex (DMUX).

(3) Examples of weather advisory facilities are weather fixed map units (WFMU), and radar remote weather display systems (RRWDS).

c. The hierarchy of service certification may require up to four certifiable contributing systems. They are the source, the processor, the display system, and the service.

(1) Source facility examples are airport surveillance radars (ASR), air route surveillance radars (ARSR), air traffic control radar beacons (ATCRBS), sensors, receivers, and processors (SRAP), common digitizers (CD), and remote center air/ground communications facilities (RCAG).

(2) Processor examples are automated radar terminal system (ARTS-II, ARTS-III) and ARTCC (CCCH) systems.

(3) Display examples are computer display channels (CDC), and brite radar indicator terminal equipment (BRITE).

(4) Service examples are composite radar data processing (CRAD), terminal automated radar services (TARS) en route communication (ECOM), and composite flight data processing (CFAD)

156. PHILOSOPHY. The essence of technical certification is the periodic verification and validation that the advertised quality and scope of services, or the capability of providing those services, are being provided to the users. These services are provided by individual systems, subsystems, and/or equipments or combinations of them depending on the type of services. The complexities of the systems, subsystems and/or equipments may also vary. The key to the certification program is the part played by the technician. Their qualifications have been demonstrated by the satisfaction of the technician certification program, professional capacity for independent judgment, and performance of responsible actions.

157. BASIS OF CERTIFICATION.

a. The basis of technical certification is the verification that the system or equipment in question is providing (or capable of providing, e.g., standby equipment), the advertised service to the user within the prescribed handbook tolerances and limits. This technical verification may be made by one or more (or any combination) of the methods outlined in paragraph 158b.

b. Some NAS systems contain user (Air Traffic) controls that will allow a certifiable parameter to be adjusted beyond a parameter's certifiable tolerance or limit. An action of this nature shall not void a system certification.

158. GENERAL CERTIFICATION TECHNIQUES.

a. The FAA has identified systems requiring certification and the certification parameters on those systems, but the choice of methods used for certification determination is left to the professional judgment of the certifying technician. The technician may use one, several, or a combination of various methods to determine that a system is providing the advertised user service. Generally, performance of the prescribed system periodic maintenance tasks will provide the necessary information for this determination.

b. Specific maintenance procedures for a particular system may be found in maintenance technical handbooks, instruction books, or other technical documentation. Other maintenance methods available to support a certification determination are:

(1) Direct measurement of certification parameters. Officially **waivered** values, where issued, shall be used in place of directive values.

(2) Monitor indications. These should include the satisfactory operation of both the control and remote indications.

(3) By recording and analysis of required information on technical performance record forms (FAA Form 6000 series).

(4) By performing a comparative analysis of flight inspection data with previous results.

(5) Visual and aural observations, such as meter readings, plan position indicator (**PPI**) data, pilot light indications, and absence of extraneous noises, excessive heat, or questionable odors.

(6) User (pilot) report of satisfactory operation; as with a voice communication check on **RCAG** equipment.

(7) By the completion of local or remotely conducted hardware or software diagnostic tests, where that capability exists.

159. CERTIFICATION STATEMENT. Certification statements for facility maintenance log entries are listed with the certification requirements for a particular equipment in the maintenance technical handbooks (see appendix 3). In those instances where a facility is required to be certified by a maintenance order or technical handbook but is not listed in appendix 3, the order taking precedence is Order 6000.15B.

160. REMOVAL OF CERTIFICATION.

a. The following measures will be taken when a certifying technician determines that a system or service has deteriorated to where it is no longer providing the advertised user service:

(1) The service or system certification shall be removed.

(2) An appropriate entry shall be entered in the facility maintenance log. Entries of this nature relating to remotely controlled or monitored unmanned facilities will be logged at the control or monitor location.

(3) Cognizant Airway Facilities and Air Traffic personnel shall be notified.

(4) Restoration activities shall be initiated.

b. Removal of certification does not necessarily require a shutdown of the related equipment. (See paragraph 139, Out-Of-Tolerance Shutdowns.)

161. PARTIAL CERTIFICATION. A system or equipment may be unable to satisfy all certification parameters but still provide a reliable lesser user service. In that event, a partial certification may be used with a certification log entry to the effect that the "...(**facility**) certified except for the (portion unavailable)." A corresponding certification log entry shall be made when the full service is restored. The issuance of partial certification does not necessarily require shutdown of the system, subsystem, or equipment.

(See paragraph 139.) Facilities that are designed to automatically downgrade to another level of service (i.e., second generation tactical air navigation (**TACAN**), **ARTS-IIIA**, and some visual navigational aids system (**VNAS**) are excluded from this requirement.

162. FREQUENCY OF CERTIFICATION. Normal and maximum periodic certification intervals are established, based upon the criticality of user service and performance stability of the system in question. These intervals are noted in the applicable maintenance technical handbooks.

a. The NORMAL certification interval is the **periodicity** to be used on a routine basis. This interval reflects the period a system can be expected to perform reliably without further maintenance attention. Generally, this interval coincides with a specific scheduled periodic maintenance activity. The window criteria system for periodic maintenance, specified in paragraph 91, may be applied to the NORMAL certification date.

b. The MAXIMUM certification interval is that beyond which a reliable **system performance** can no longer be assured without verification.

163. EXPIRATION OF MAXIMUM CERTIFICATION INTERVAL.

a. Reasonable effort should be made to certify a system before the expiration of the maximum certification interval. This may include an early certification to move the next interval to a more favorable timeframe.

b. A site access problem or unavailability of a certified technician are two examples of potential causes for a system certification interval being exceeded. A flight inspection evaluation may be used in either case. (See paragraph 158b(6).)

c. The certification entry in the facility log following a flight inspection evaluation shall be made by a technician with certification authority for that facility. If the site access **is** impossible, this entry shall be made at the control or a related site, and the regular facility log updated on the next site visit via a delayed entry.

d. If a facility certification maximum interval is exceeded, the certification shall be removed and the following action(s) taken:

(1) The appropriate Air Traffic officials shall be notified for systems providing an Air Traffic service. Air Traffic may elect to continue using the facility. (See paragraph 139b.)

(2) A NOTAM shall be issued for systems providing a direct service to the flying public, stating: "(subject of the NOTAM) may be unreliable."

(3) An entry shall be made in the facility maintenance log noting why certification was removed, the extent of coordination effected, and any other pertinent details. The regional AF division shall be notified.

164. CERTIFICATION RESPONSIBILITIES. Certification shall be performed by personnel with specific written certification authority and responsibility on the subject facility. Refer to Order 3400.3E. This restriction does not prevent noncertified technicians from performing and logging maintenance duties. Such maintenance must **either** be confined to noncertification parameters or followed with a system certification by a fully qualified technician.

165. NEW CERTIFICATION REQUIREMENTS. New systems, services, and equipment are continually added to the facility population in the National Airspace System. Each of these will be included in appendix 3 if they meet the policy criteria of paragraph 155. Certification requirements will then be issued in the appropriate technical handbooks.

166. CERTIFICATION PRIOR TO COMMISSIONING.

a. Occasionally a new system will require a lengthy test and evaluation involving control of live air traffic before commissioning. An initial certification normally occurs just prior to facility commissioning. A system used in this manner will require a certification based on interim standards. Interim certification standards may also be required if normal standards and tolerances have not been fully developed. In that event, interim standards may be based upon the demonstrated ability of the system to perform its intended function. This demonstration may partially consist of the successful completion of a system software diagnostic test.

b. The use of interim certification standards shall be fully coordinated prior to use with appropriate Airway Facilities engineering personnel in the regional and Washington-headquarters offices of concern. Interim certification guidance must include a cancellation clause, effective when the regular standards are in place.

167. REMOTE CERTIFICATION. New systems often include provisions for remote maintenance monitoring (RMM) and control. This feature is also being added to some existing systems. Facilities may be certified via the RMM when the capability to remotely verify system certification parameters becomes available.

168.-169. RESERVED.

CHAPTER 6. PROTECTION OF AGENCY PROPERTY AND PERSONNEL

SECTION 1. PROPER EQUIPMENT USE AND PERSONNEL WORK PRACTICES

170. INTRODUCTION. Agency directives in the 3900 series (in particular, note Orders 3900.6A, Occupational Safety Program for Airway Facilities Personnel, 3900.14C, Safety Climbing Equipment at Existing National Airspace System (NAS) Facilities, 3900.19A, Occupational Safety and Health, 3900.23, Report of Airway Facilities Occupational Safety Program, 3900.24A, Accident and Fire Reporting, and 3910.3A, Radiation Health Hazard and Protection) and agency safety alert directives discuss personnel safety at agency facilities. In addition, many maintenance directives contain precautions regarding personnel safety and procedures to be employed in handling components and equipment to minimize damage. Some of the specific precautions and dangers are included in the following paragraphs.

171. ELECTRICAL SHOCK HAZARDS. Personnel shall at all times exercise care while working on equipment, particularly where dangerous high voltages exist, and especially when inspection plates and dust covers are removed or access doors are open, exposing internal wiring. Contact with **ac**, **dc**, or **rf** potentials can result in severe shocks, burns, or loss of life. Particular attention shall be given to the proper use of the grounding cable prior to working on high-voltage circuits.

172. RADIATION HAZARDS. The improper use of high power output radar and communications systems, subsystems, and equipment may present radiation hazards to Airway Facility personnel. Order 3910.3A prescribes procedures and criteria for the evaluation and control of radiation in the occupational environment, identifies specific hazards, and describes precautions to be observed by agency personnel.

173. INTERLOCKS. DO NOT DEPEND ON INTERLOCK SWITCHES TO REMOVE HAZARDOUS VOLTAGES. Always touch circuits with the grounding stick before touching them with the hands or body. Do not tamper with interlocks. Access gate, door, or safety interlock switches shall not be removed, short circuited, or tampered with in any way, except by authorized maintenance personnel when considered unavoidable or when necessary for maintenance (e.g., engine generator isolation switch).

174. SEMICONDUCTOR DEVICES/INTEGRATED CIRCUITS.

a. Semiconductor devices can be damaged by transients, capacitive leakage currents, inductive leakage currents, resistive leakage currents and static discharges. Hence, body static must be discharged and external grounds and **ac** lines must be disconnected to eliminate ground-return paths before touching semiconductor device terminals with hand tools, or especially with soldering irons. (Element windings have high capacitance to ground.) Where necessary to avoid transients, do not unsolder transistors, diodes, or other semiconductor devices, nor remove them from plug-in mountings, without first **deenergizing** sources of element voltages. Soldering guns shall not be used in the repair of solid-state equipment since the high **ac** tip current could induce damaging currents in the circuitry. Installation with reversed leads, also polarity reversal of supply voltages, usually results in serious degradation or failure.

b. Do not test any integrated or microelectronic circuit device without carefully observing input/output limitations and other applicable precautions. The minute semiconductor junctions are easily damaged, making it necessary to discard the entire device. Before attempting to use ohmmeters for circuit tracing where semiconductor devices are involved, or for semiconductor devices testing, take the following precautions:

(1) Beware of destructive high currents often possible when on low ohm ranges.

(2) Beware of voltages on high ohm ranges, which may be in excess of rated breakdown voltages of transistors, diodes, or other devices.

(3) Determine ohmmeter internal battery polarity present on the test leads (usually the reverse of the marked polarity, which applies only to the voltage of current ranges of multimeters).

175. SOLID-STATE HEAT SINKS. Where solid-state devices with heat sinks are used, it is important to recognize and avoid certain maintenance activities that could result in damage to the equipment or increase the shock hazard to the individual working on the equipment. Heat sinks convey heat from the solid-state device to the external environment by air circulation. Therefore, the addition of a physical obstruction that restricts air flow past the assembly shall be avoided to prevent overheating of the equipment. In addition, it should be recognized that while the equipment is energized, heat sinks are frequently above chassis ground potential and, therefore, shall not be used as a resting place for metallic objects that could establish short circuit paths or through which human contact could be made with the heat sink assembly potential.

176. HEAT DAMAGE TO PRINTED CIRCUIT BOARDS.

a. Heat damage to printed circuit boards is sometimes caused by hot resistors in direct contact with the surface of the board on which they are mounted. The heat dissipated by the resistor is transferred by direct thermal conduction to the printed-circuit board, causing a localized hot spot. In the early stages of damage, board discoloration will appear beneath the resistor, followed by charring of the board. In the final phases, insulation breakdown of the board occurs and the etched printed-circuit foil peels from the board. Printed-circuit boards are not designed to be heat sinks.

b. Heat damage from this specific cause can be retarded if hot resistors are moved away from direct contact with the board. While heat transfer by convection will still be present, heat transfer by conduction will be eliminated. A useful technique is to mount the resistor so that 1/16 or 1/8 inch of airspace exists between the resistor and the board. This clearance can be provided when soldering a new resistor in place by first putting a piece of scrap solder or hookup wire between the resistor and the board. This technique may be used when REPLACING heat-damaged resistors that have failed or whose resistance value is beyond the applicable tolerance/limit, provided that sufficient physical space is available to permit this corrective action and also that board discoloration does exist below the old resistor.

177. TANTALUM CAPACITORS. This type of capacitor is currently becoming more prevalent in new FAA electronic equipment as more designers make use of its desirable small-size, large-capacitance characteristic. They are also used increasingly in field modification kits issued by the FAA Logistics Center. While Tantalum capacitors are manufactured to rigid military specification (**MIL-C-3965**) requirements, there are certain handling precautions that must be observed to prevent unnecessary lead damage. The precautions are similar to those required in the handling of semiconductors, fragile resistors, and other similar components. Since the copper wire leads are welded to the Tantalum stubs emerging from the end seals, excessive strain or sharp bends on these leads should be avoided by holding the lead adjacent to the weld with a long-nose plier while the rest of the lead is bent to the desired shape. Deformation of the seal by bending of the Tantalum stub should also be avoided in order to preclude leakage of the electrolyte. Reverse polarity voltage must not be imposed on polarized wet Tantalum capacitors during any checkout, test, inspection, or use.

178. SELENIUM. Raw selenium powder is a poison when taken into the body. It is not probable that one will obtain selenium powder contamination from manufactured rectifiers, but the user may be subjected to the extremely poisonous fumes given off when an arc-over occurs in the selenium rectifier. Avoid inhaling selenium fumes. Open window and doors promptly to remove fumes. Take the equipment containing the burned rectifier outside as soon as possible. Do not handle damaged portions of the rectifier with bare hands as absorption of the selenium powder is possible through burns or cuts in the skin or by contaminated hands touching food or cigarettes. Even when thermally cold, it produces the same form of burn as do caustics.

179. SILVER SOLDER.

a. Cadmium Oxide Fumes. Hard solder, often silver solder that may contain cadmium, is used in brazing air-conditioner refrigerant lines. When a cadmium containing silver brazing alloy is heated appreciably above its melting point, acutely poisonous brown or yellow cadmium oxide fumes are released. Inhalation of cadmium oxide fumes, even short exposures to high concentrations, can result in serious and sometimes fatal damage, primarily to the respiratory tract and possibly the kidneys and the liver as well. Inhalation of the fumes may cause dryness of throat, coughing, headaches, a sense of constriction in the chest, shortness of breath, and vomiting. More severe exposure may cause marked lung changes, with persistent coughing, pain in the chest, severe shortness of breath, and prostration; the urine is frequently dark. However, the symptoms of cadmium oxide poisoning are usually delayed for several hours after exposure, and fatal concentrations may be breathed without sufficient physical discomfort to warn maintenance personnel of the presence of the dangerous fumes. Threshold limits have been established at 0.1 milligrams of cadmium oxide per cubic meter of air.

b. Precautionary Measures. Adequate ventilation shall be provided whenever any silver solder is used since the presence of, and/or the concentration of, cadmium in the solder may not be readily known. Where adequate ventilation cannot be supplied, respirators shall be provided to effectively prevent serious exposure to the cadmium oxide fumes.

c. Treatment. Persons suspected of cadmium oxide fume intoxication shall be **immediately removed** from the contaminated atmosphere and placed at complete

rest, regardless of how mild the symptoms are, because the full effects of the poison are often delayed. Even slight exertion may aggravate the condition seriously. Oxygen and sedatives should be administered if necessary. **Summon a physician at once.**

180. MACHINERY AND TOOLS. Gloves, ties, and loose clothing shall not be worn around moving machinery. Tools should be **kept** clean and in good working condition. Particular attention should be given to the sharpness and squareness of screwdriver blades. Box and socket type wrenches should be used rather than the open-end type, thereby lessening the chance of slippage. Bench grinders, drill presses, vises, and other tools should be bolted to the workbench. Always wear goggles when using a grinder. Avoid cleaning, adjusting, or lubricating machinery while it is in operation. Before any repairs are undertaken, open all electrical switches controlling the equipment, and tag or lock them to prevent accidental closing.

181. CLEANING SOLVENTS. Inhaled fumes from some solvents, such as carbon **tetrachloride**, are extremely hazardous to the respiratory system and some may have a caustic effect on the skin. Personnel shall not use these types of solvents. Any chlorinated or petroleum base solvent, such as **trichloroethane** or **stanisol**, that meets health and safety requirements may be used for cleaning.. Whenever any solvents or cleaners are used, adequate ventilation shall be provided. Care should be used in cleaning equipment with solvents, especially where the temperature of the air or parts being cleaned is in excess of **100° F (38° C)**. Solvents shall be stored in safety cans. **Trichloroethylene** has been identified by Kennedy Space Center as the cause of multiple printed-circuit board capacitor failures. The solvent affected rubber seals on the capacitors. Alcohol is a recommended cleaning substitute where circuit elements involve rubber terminal seals.

182. USE OF FIRE EXTINGUISHER. An inherent danger of vacuum tube implosion exists when using carbon dioxide and dry chemical extinguisher in combating electronic fires where large vacuum tubes operating at high temperatures are present. The cooling effect of the extinguishing media when striking these tubes could cause a tube implosion, with the attendant danger of flying glass, or debris. The proper method for using these extinguisher is to direct the discharge of the extinguishing media where the combustible material is present but not above the base of the tubes and never directly on the glass envelopes.

183. WORKING ON ELEVATED STRUCTURES. Employees shall use safety devices provided and exercise extreme caution when working on elevated structures to prevent painful or even fatal injury. At some locations, ice is a special hazard. Not only is climbing dangerous when ice is present, but there is also the very real hazard of ice falling from elevated structures because of wind or thawing conditions.

184. GROUNDING PORTABLE EQUIPMENT.

a. All portable test equipment and electric tools shall be grounded before using, either by the appropriate use of a grounding type **ac** plug or by grounding the outside case with a suitable lead. The only exception is electric hand tools that are classified as being double-insulated and approved for use without a grounding type **ac** plug. Adapters for connecting grounding type **ac** plugs to

nongrounding type **ac** receptacles shall not be used without connecting the **ground** lead of the adapter to a ground that is separate from the **ac** neutral lead.

b. Some of the portable electronic equipment used in the FAA, such as the **Gonset 11B** type transceiver and the **CA-405** printer test set, use fuses physically located in a two-connector plug, which connects the portable equipment to an **ac** convenience outlet. Portable equipment using this **fuseplug** cannot be equipped with the standard three-wire power cord and the three-conductor grounding type **ac** plug without removing the **ac** fusing to the equipment. Therefore, be sure the cabinet or housing of portable equipment using fuseplugs is securely grounded before connecting the portable equipment to an **ac** outlet.

185. BATTERY SAFETY, ACID SPILLS AND BURNS, AND EXPLOSION HAZARDS. An FAA technician is required to inspect, evaluate, and maintain several types of storage batteries. Knowledge of batteries and needed safety precautions will protect the technician from hazards or further injury should an accident occur.

a. Batteries used in the FAA vary in weight from a few ounces when used in flashlights and test equipment, to several hundred pounds when used in power conditioning systems and motive equipment (i.e., electric scooters, cars, trucks, towing, and forklifts). There are three main hazards to be considered:

(1) Improper lifting procedures will cause muscle strains. Also, improper gripping will allow the battery to slip from a **person's** grasp. When batteries of this size are placed in a position where muscle **strains** may occur, a mechanical lifting device should be used or two people should do the lifting.

(2) Batteries contain a liquid solution, which means that the center of balance can change. If a person's grasp **on** the battery is not secure, the battery can slip from his hands. A battery should be carried with an insulated battery strap or a battery cradle. The battery strap attaches to the battery terminals to form a handle for carrying. The battery cradle encases the battery with insulated netting material or is a platform with a handle for carrying.

(3) Battery fumes may also be harmful to personnel because of:

(a) The hazards of breathing the fumes themselves.

(b) The fumes may displace oxygen.

b. Industrial batteries, such as those used in heavy motive equipment or power conditioning systems, weigh several hundred pounds. A mechanical lifting device should always be used for moving industrial batteries. Handling batteries of this size should not be attempted without proper equipment and operational knowledge. Some mechanical lifting devices are:

(1) Chain hoists

(2) Overhead cranes

(3) Forklifts

c. Batteries such as lead-acid batteries contain an electrolyte, which is a mixture of sulfuric acid and water. This acid solution is corrosive to certain metals, will destroy clothing, and can cause severe burns or blindness. These batteries are equipped with vent caps that serve a dual function. The caps will allow some tilting of the battery; however, prolonged tilting or inversion of the battery will allow the electrolyte to leak. The caps allow hydrogen gas to escape while preventing the electrolyte from splashing out. Batteries of this type are designed to be used in a level position or near level position. When carrying a battery containing electrolyte, use a battery strap or cradle. Dripping electrolyte on clothing will destroy most fabrics, if the solution is not neutralized immediately after the spill. The electrolyte can be neutralized by using any of the following solutions:

(1) Bicarbonate of Soda. Bicarbonate of soda mixed with water can be used to rinse the area of an acid spill.

(2) Soda Ash. The soda solution will neutralize the corrosive effects of the sulfuric acid.

NOTE: Bicarbonate of soda and soda ash are harmless to the skin. These solutions should be used to prevent acid burns where acid was spilled on the skin.

(3) Caustic Soda. Caustic soda will neutralize the acid, but it can cause skin burns. Caustic soda should be used with extreme care, ensuring that the solution does not come in contact with the skin or eyes.

d. Acid Burns. Acid burns to the skin should be treated immediately with running water and salve. A physician should inspect the area as soon as possible for damage which may not be apparent. Remove clothing on which the acid solution has been spilled. Remember that chemical burns to the skin will occur if the electrolyte is allowed to remain in contact with the skin. The best protection against chemical burns when working with electrolyte is protective clothing. Rubber gloves, face shields, and rubber aprons will protect the skin and clothing.

e. First Aid. There may be occasions when a technician will have to mix electrolyte. Before mixing this acid solution, the technician should know where the first aid equipment is located, how to administer first aid to oneself or to fellow workers, and the nearest source of running water or a sealed container of eyewash. Splashing electrolyte acid into the eyes requires immediate first aid. Should this occur, there are two things to do:

(1) Flush the eyes for 15 to 30 minutes with running water.

(2) See a physician as soon as possible.

(3) Two things you should NOT do are:

(a) DO NOT apply neutralizing agents or salves to the eyes.

(b) DO NOT rub the eyes.

NOTE: Damage to the eyes by acid solutions can cause blindness. Rubbing the eyes or applying salves or neutralizing agents can cause further damage. Flush the eyes with an approved eyewash system. All FAA battery work areas shall be equipped with eyewash systems.

f. Protective Equipment. Protective equipment, such as goggles or a face shield, should be worn at all times when the hazard of electrolyte spill is present. Pouring prepared electrolyte into batteries, mixing electrolyte, checking the electrolyte levels, or charging batteries are times when splashes may occur.

g. Mixing Electrolyte. When mixing electrolyte, ALWAYS POUR ACID INTO WATER!!! Never pour water into acid. Pouring water into acid causes a violent reaction that becomes explosive. The reaction caused by mixing electrolyte improperly may cause an accident that requires immediate first aid. The best protection against all accidents is prevention.

h. Explosion Hazards (Batteries).

(1) Hydrogen is generated when a battery is being charged or recharged. The electrochemical process also produces heat. The hydrogen and heat could create a volatile situation. Overheating can be damaging to the internal composition of the battery, while hydrogen could be EXPLOSIVE.

(2) During the charge and recharge periods, hydrogen is released through the vent caps. Hydrogen is 14 times lighter than air and is dispersed quite rapidly outside the battery cells. Air containing as little as 4 percent hydrogen is highly volatile if ignited.

(3) Batteries should be maintained in a well ventilated and ignition-free area, Some sources of ignition are:

ia) Open flames from any source.

(b) Sparks from welding equipment.

(c) Sparks from electrical equipment.

(d) Lighted cigarettes.

(e) Sparks caused by connecting batteries to electrical circuits or charging systems.

i. Working Equipment.

(1) Use a flashlight that will not cause a spark to inspect electrolyte levels of a battery.

(2) Always use well insulated tools when working on or around batteries. The heat and hydrogen gas generated by recharging a short circuited battery is explosive.

(3) Always assume that there is explosive potential at the battery vent caps and practice those procedures that ensure the safety of yourself and others.

186. MOISTUREPROOFING RF CABLE CONNECTIONS. Facility outages have been attributed to moisture accumulation in **rf** coaxial cable connectors. The following information is provided as guidance in moistureproofing these connectors. The material and technique used should be based on permanency and the particular situation.

a. Preliminary. The connectors shall be **free of** internal moisture and the adhering surfaces shall be dry and free of dirt, grease, oil, or any other substance that could affect adhesion. Prior to mating connectors that are to be moistureproofed, the connectors should be cleaned with alcohol to ensure that all moisture has evaporated.

b. Semipermanent Connections. These materials and techniques offer a reasonable compromise between cost effectiveness and the need for later accessibility to the treated connection.

(1) Tape only. This technique is satisfactory except where moisture and humidity is quite high. Two layers of Scotch-vinyl electrical tape, Type **88** (or equivalent), should be applied. The wrapping should extend 2 to 3 inches on both sides of the connector, and the wrapping should start at the bottom for both layers if the connection **is in** a vertical run. Scotch Type **88** is preferred over Type **33** in that its consistency is more constant with temperature changes.

(2) Tape and Nonsilicone Compound. Having taped the connection as in step (1), additional moistureproofing will result with a spray-on application of **Plastic-Kote strippable** vinyl or **Krylon #1302** acrylic. Silicone compounds are not recommended for semipermanent type connections because the silicone is difficult to remove. Failure to remove all the silicone compound results in poor adhesion of tape when it is necessary to reseal the connection.

c. Permanent Connections. The following techniques and materials may be employed where access to the connector will probably not be required or where the connection is subjected to excessive moisture against which the techniques listed in subparagraph b are ineffective.

(1) Silicone Adhesives and Rubber Sealants. One of the most effective ways of preventing the entry of moisture is to encapsulate the connection with one of several silicone or rubber sealants.

(2) Heat-shrinkable Tubing. Either thin-wall or thick-wall shrinkable tubing may be applied. The thin-wall type has a shrink ratio of about 2 to 1, while thick wall types have a shrink ratio of about 3 to 1. The thick-wall types are available with a factory-applied sealant that will soften and flow around irregularly shaped surfaces. Heat can be applied with a small gas torch or heat gun.

(3) Tape and Glyptal. Connections may be moistureproofed by application of one layer of rubber electrical tape followed by two layers of friction tape. This wrapping should then be covered with black **Glyptal** electrical varnish, applied with a brush.

d. Materials. The following list is representative of the materials available for moistureproofing coaxial cable connections. Materials to be used are not restricted to those listed; suitable equivalents may be employed. Materials may be procured locally or obtained from the FAA Logistics Center.

- (1) Type 88 Scotch Vinyl tape.
- (2) Type 4 Dow Corning silicone compound, NSN 9059-00-707-4498.
- (3) Dow Corning Silastic RTV-732 adhesive/sealant.
NSN 8040-00-843-0802.
- (4) GE RTV-102 adhesive/sealant, NSN 8040-00-833-9563.
- (5) Scotchkote electrical coating, NSN 5970-00-962-3335.
- (6) Krylon #1302 acrylic plastic.
- (7) Krylon #277 moisture/fungus resistant varnish, NSN 8010-00-180-6343.
- (8) Alphalex Types FIT 105, 221, 300, and 350 shrinkable tubing.
- (9) American Pamcor Inc., Types 603023 and 603024 shrinkable tubing.
- (10) Dow Corning Type II silicone compound, NSN 8040-00-843-0802.
- (11) Glyptal insulating finish.
- (12) Rubber tape (3M No. 23, cable splicing).
- (13) Rubber tape, Dow Corning 3-7132, NSN 8040-00-225-4548.

187. PROTECTION OF UNUSED CIRCUIT SOCKETS IN ELECTRONIC EQUIPMENT.

a. Background. Electronic equipment may contain circuits that are not used or required. This may occur as a result of a modification that eliminates the need for a circuit (it is less expensive to keep the unused components in the equipment than to remove them) or when a functional requirement for the circuit existed previously but no longer exists. Sometimes, vacuum tubes have been installed in sockets of these unused equipment circuits, even though there is no operational or maintenance requirement for them. This practice is particularly wasteful if such sockets still have filament voltages applied to them, since the vacuum tubes are used unnecessarily.

b. Action. Airway Facilities personnel shall no longer install and are authorized to remove vacuum tubes from unused circuit sockets in commissioned or in-service electronic equipment provided there will be no adverse effect on the functional use of either the active or standby equipment. Covers shall be placed over the socket to prevent its accidental use and to keep dust out. The foregoing action is not considered a modification, but no other component removal (or cannibalizing) shall be performed on such circuits without specific authorization from the Systems Maintenance Service. If the circuit is again required in the

future, normal circuit operation should be expected by merely removing the tape and reinstalling the vacuum tube.

188. EQUIPMENT POWER CONNECTIONS. Particular attention should be given to power input circuits of equipment designed for use on either 120-volt or 240-volt operation. This equipment may have a single fuse in one side of the power input circuit, or they may be found with both sides of the power input fused. When connecting this type of equipment for 120-volt operation, precautions should be taken to ensure that the neutral side of the wiring is not fused. Persons who work on electrical equipment should be aware that the National Electrical Code's color coding of wires applies to buildings and structures and not to the internal color coding of wire found in many types of electrical or electronic equipment. The circuitry, rather than the color coding of the equipment's internal wiring, should be checked when connecting or servicing equipment.

189. POLYCHLORINATED BIPHENYLS (PCB's). PCB's, even at extremely low concentrations, are hazardous to health. They are very stable compounds with an oil-like consistency and if released in the environment, will take several decades to decompose. They were generally used only in transformers where fire safety was critical; however, PCB's are contained in many other items which may also be found in FAA facilities. Examples of PCB-containing items are transformers, capacitors, **florescent** light ballasts, hydraulic machinery, voltage regulators, and circuit breakers. Such items with PCB concentrations of 500 ppm or more generally require proper marking, periodic inspections, and specific disposal procedures. PCB items with PCB concentrations ranging from 50 ppm to 499 ppm do not require marking or inspections, but do require proper disposal procedures. Items with PCB concentrations of less than 50 ppm are considered non-PCB. Even though direct contact with PCB's is to be avoided, the safe handling of PCB liquids resulting from spills or corrective maintenance is possible with the use of protective clothing and proper handling procedures. FAA Order 1050.14, **Polychlorinated Biphenyls** in the National Airspace System, provides the agency policy on procedures and responsibilities for personnel safety and regulation compliance concerning PCB's in the National Airspace System.

190. ELECTROSTATIC DISCHARGE (ESD). The following guidelines describe an ESD prevention method that is consistent with the intent of proper handling and protection of circuit packs.

a. Assume all that circuit packs containing electronic (solid-state) components can be damaged by ESD.

b. When handling circuit packs (storing, inserting, and removing), always use the appropriate grounding procedure: either a wrist strap connected to ground or, when standing, a heelstrap with a grounded dissipative floormat.

c. In addition, handle all circuit packs by the faceplate or latch and by the top and bottom outermost edges. Never touch the components, conductors, or connector pins.

(1) Observe warning labels on bags and cartons. Whenever possible, do not remove circuit packs from antistatic bags or cartons until ready to insert into a storage bin, etc.

(2) Otherwise, open all circuit packs at a static-safe work position with wrist straps and dissipative table mats.

d. Always store and transport circuit packs in antistatic packaging. Shielding is not required.

e. Keep all static-generating materials, such as food wrappers, plastics, and Styrofoam containers, away from all circuit packs.

f. Upon removal from storage, immediately put circuit packs into antistatic packages.

g. Whenever possible, maintain relative humidity above the 20-percent level.

h. Some anti-static bags are conductive. Care should be taken to prevent accidental shorts between the bag and current carrying circuits.

191.-192. RESERVED.

SECTION 2. THEFT AND VANDALISM REPORTING

193. GENERAL. All incidents involving theft of, or malicious damage to, government personal and real property shall be reported to local agency security representatives. In addition, these incidents shall be reported to such other law enforcement agencies as may be required (local police, state police, and the Federal Bureau of Investigation).

194. ACTION. Employees discovering incidents of vandalism shall take immediate action to assess the extent of damages and shall take those steps necessary to prevent further loss of government property. (This action might include such measures as temporary repairs to buildings, fences, or security lights.) Employees shall notify supervisors and appropriate law enforcement personnel of each incident by telephone or earliest available means, so that proper investigation may be carried out with minimum delay. In instances involving the theft of FAA property and equipment and immediately upon discovery, the sector manager or designee should ensure that the regional Civil Aviation Security Division shall be provided with the appropriate serial numbers for each item stolen. Incidents involving theft or damage to a facility shall be noted in the facility maintenance log in sufficient detail to substantiate conditions. Air Traffic personnel shall be advised of facility status and **NOTAM's** shall be issued as necessary. In incidents of recurring vandalism involving FAA facilities, the sector manager or designee, in cooperation with regional representatives, shall take such action as deemed appropriate to prevent further occurrence of such incidents. This might include, but is not limited to, installing burglar alarms, **24-hour** facility surveillance, or fencing.

195. REFERENCE. For detailed information, refer to Order 1600.6B, Protection of Agency Property.

196.-197. RESERVED.

SECTION 3. SECURITY

198. SECURITY CONTROL OF AIR TRAFFIC AND AIR NAVIGATION AIDS (SCATANA). The unclassified details of the SCATANA plan have been incorporated in Part 300 of Order 7610.4G, Special Military Operations. SCATANA supersedes the SCATER (Security Control of Air Traffic and Electromagnetic Radiation) program under which the FAA provided remote on/off control (commonly called CONELRAD control) of navigational aids. The SCATANA plan requires control of designated "military necessity" VOR and TACAN facilities; the facilities so designated are presently provided with remote on/off capability, which satisfies the requirement for security control.

199. COMPUTER SECURITY, PRIVACY, AND FREEDOM OF INFORMATION ACT. Certain legal restrictions are placed on the collection, use, and dissemination of information. (See Order 1280.1, Protecting Privacy of Information About Individuals, and Order 1600.54B.) These requirements must be applied, when and where appropriate, to the provisions of this directive.

a. Automated Data Processing. Order 1600.54B discusses security requirements and responsibilities for agency facilities and personnel. No matter what automated system (e.g., MMS, 2nd GEN VORTAC, IMCS, or other RMM systems), the user shall not disclose the individual password to another user or non-user. If the user believes that the individual password has been compromised, then the password should be changed. The user shall be responsible for maintaining the integrity of the individual password.

b. Accreditation of the automation program and equipment shall be obtained from the regional Security Division. If the computer has or contains sensitive information, then the computer/facility must be a certified system. (See Order 1600.54B for procedures.)

200. RESERVED.

SECTION 4. SAFETY ON AIRPORTS

201. AIRCRAFT JET BLAST HAZARD.

a. There have been a number of accidents resulting in damage to Government vehicles and injuries to agency personnel while crossing runways behind jet aircraft at the moment when full engine thrust was applied by the pilot.

b. In all Government vehicles used to service airport facilities, all test and working equipment, tool boxes, or other cargo shall be firmly lashed down or placed securely in the trunk compartment if not permanently installed on shock mounts or other means to ensure stability in the event of accident,

c. All agency employees who operate motor vehicles on peripheral service roads in the vicinity of warmup or holding aprons, particularly when crossing runways behind jet aircraft, shall exercise extreme caution to avoid the potential hazard caused by aircraft blast.

202. USE OF VEHICLES ON AIRPORTS.

a. All vehicles used in the performance of maintenance duties and operating upon any part of an airport landing and taxiing area shall display the proper flag or rotating **beacon** required by Order 4670.2B, Motor Vehicle Management. At all airports with an airport traffic control tower, all Government vehicles operating on or across usable runways or **taxiways** shall be equipped for two-way radio communication with the tower ground traffic controller.

b. Agency employees shall obtain radio clearance from the ground traffic controller before crossing an airport runway or **taxiway**, and then shall cross without delay.

c. Agency employees shall utilize peripheral service roads whenever possible. The crossing of, and the use of, active runways are to be kept to an absolute minimum.

d. When it becomes necessary to get onto an active runway to make measurements, it shall be accomplished during low-activity periods whenever possible, and two-way radio communications shall be maintained with the ground traffic controller at all times. These activities shall be accomplished as rapidly as possible.

e. At noncontrolled airports (no local airport traffic control tower), locally documented ground rules shall be established to ensure adequate safety of Government vehicles and agency personnel while operating upon any part of the landing or taxiing areas. These ground rules shall include, but shall not be limited to:

(1) Provisions for aircraft right-of-way over ground vehicles.

(2) Requirements for vehicle operators to bring their vehicles to a complete stop at least 100 feet from runway and 25 feet **from a taxiway**, look both ways, and listen for aircraft in the vicinity. The vehicle operator should proceed only when they will not impede an aircraft.

APPENDIX 1. DEFINITIONS

ANNUALLY. A scheduling term, meaning once every year, and at 12 month intervals.

AS REQUIRED. A scheduling term, meaning whenever the need has been detected.

ASSEMBLY. Two or more parts joined together to perform one or more elementary functions not normally subject to disassembly without losing the designed function.

AUTOMATED LOG. A chronological record of all maintenance activities (such as restoration, repair, modification, flight checks, certification) contained or resident in a software system running on a computer. It will consist of a combination of data bases of logged entries as well as reference tables of data that may be inserted (by default or manually) into the logging entry for validation and linking of information. When using the **MMS**, automated logs are contained in the logging subsystem.

AUTOMATIC LOGGING. A chronological record of events in the form of status data gathered by sensors at a remote location then sent to a host or master computer, which stores the data in a computer data base. This data base is typically called a history log/file or activity log/file. It is used to automatically log facility operation status for monitoring and control purposes.

BASELINE. A configuration identification document or a set of such documents formally designated and fixed at a specific time during the configuration items life cycle. Baselines, plus approved changes to those baselines, constitute the current configuration identification. FAA establishes baselines of **NAS** requirements, for each **NAS** design level, for the four major acquisition baselines, as well as for the **NAS** product baseline.

BIENNIALLY. A scheduling term, meaning once every 2 years, and at 24 month intervals.

BIMONTHLY. A scheduling term, meaning once every 2 months, and at approximately 60 day intervals.

BIWEEKLY. A scheduling term, meaning once every 2 weeks, and at 14 day intervals.

CERTIFICATION. The technical verification performed prior to commissioning and/or service restoration after a scheduled/unscheduled interruption affecting certification parameters, and periodically thereafter inclusive of the insertion of the prescribed entry in the facility maintenance log. The certification validates that the system is providing an advertised service to the user, and/or that the system/equipment is capable of providing that advertised service. It includes independent determination about when a system/equipment should be continued in, restored to, or removed from service. (See chapter 5, section 4, of this order.)

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CERTIFICATION PARAMETER. Certification parameters are selected critical indicators of the quality of the required or advertised services being provided to the user of systems, subsystems, and equipment.

COMMISSIONED. A facility, system, subsystem, or equipment is considered to be commissioned if it has been formally accepted and placed into operational use or service in the **NAS**. It indicates that the Airway Facilities sector has assumed formal maintenance responsibility.

COMMISSIONING. The formal exercise of incorporating a facility, system, subsystem, or equipment into the **NAS**. This term has legal and budgetary significance and has been used to justify logistic and manpower operational support as an FAA obligation under public law.

CONFIGURATION CONTROL DECISION (CCD). A record of decision on a proposed change to a baselined configuration item. If a change is approved, a **CCD** directs the action required to implement the decision.

CONFIGURATION MANAGEMENT. A discipline applying technical and administrative direction and surveillance to: (a) identify and document the functional and physical characteristics of a configuration item, (b) control changes to those characteristics, and (c) record and report change processing and implementation status.

COORDINATED UNIVERSAL TIME. See **UTC**.

DAILY. As used in stating a maintenance schedule, daily is intended to mean once every calendar day for those locations staffed 7 days a week. At other locations, daily is intended to mean every calendar day resident staffing is on duty, the schedule may be reduced to a minimum of 3 times a week, with not more than 3 days between successive repetitions, in the event of any emergency, and at nonresident or one-man locations.

EIGHT HOURS. A scheduling term, meaning three times each calendar day, once each shift or watch, and at approximately 8 hour intervals.

EMERGENCY MODIFICATION. An emergency modification is a temporary modification installed to maintain continuity of air navigation, air traffic control, communications, or support service during unusual or emergency conditions.

EQUIPMENT. Equipment is a complete operating assembly, either operating independently or within a system or subsystem.

EQUIPMENT COMPONENT. An equipment unit subassembly, designed to provide an essential function in a unit, consisting of modules, parts, and associated hardware, including the chassis.

EQUIPMENT UNIT. A complete assembly, designed to perform a process function, consisting of components, modules, parts, and associated hardware, including the cabinet, supporting base, or shock mounts.

FACILITY. The term denotes the total electronic, environmental and electric power generating or distribution system, and the structures used to house, support,

and/or protect these systems. A facility may include a number of systems, subsystems, or equipment, e.g., a long-range radar facility, or it may in its entirety consist of only a single system, subsystem, or equipment such as an isolated **RML/RCL** repeater facility.

FIRMWARE. Software instructions which have been permanently stored in read-only memory (ROM).

GROUND CHECK. A ground check is an evaluation at ground level of the radiated signal associated with a system, subsystem, or equipment.

HARDWARE. In computer applications and elsewhere, the term hardware refers to the physical equipment or devices used to perform simple or complex functions. This term must be qualified by an appropriate restrictive modifier to carry a specific identification or meaning.

INITIAL TOLERANCE/LIMIT. As used in maintenance technical handbooks, the initial tolerance/limit is the maximum allowable deviation from the standard value of a parameter, or the range, that was acceptable or permissible at the time of initial installation, tuneup, or construction; that will be allowable after any modification or modernization; and that is desirable after any readjustment following an out-of-tolerance/limit condition.

INSURANCE STOCK. These are items of material essential for continued service of a facility, or for human safety, for which procurement delays are intolerable.

INTERRUPTION. The loss or unavailability of a facility/service, regardless of the duration.

JOINT-USE. Whenever an installed facility, system, subsystem, or equipment provides services to both the FAA and one or more other agencies or military services, it is known as "**joint-use.**" The facility, system, subsystem, or equipment **may be** owned by either FAA or the sharing organization. The term is used primarily in connection with radars.

KEY INSPECTION ELEMENT. A key inspection element is a selected nonequipment oriented parameter, which is a critical indicator of whether or not a support function is being accomplished adequately and proper maintenance is being performed. A key inspection element is the counterpart of a key performance parameter in such areas as roads, grounds, etc. These elements are clearly identified in the table of standards and tolerances.

KEY PERFORMANCE PARAMETER. A key performance parameter is a selected parameter of the system, subsystem, or equipment, which is a critical indicator of whether or not it is performing its intended function. These parameters are clearly identified in maintenance technical directives.

LOGISTIC SUPPORT. Logistic support is the support of **NAS** system operational requirements through acquisition, storage, distribution, and inventory control of instruments, supplies, spare parts, tools, and working equipment.

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MAINTENANCE. Maintenance, as used in connection with Airway Facilities systems, subsystems, and equipment, is intended to **mean** any specified sequence of steps prescribed to accomplish an activity to verify or continue a system or service operating. As used in maintenance technical directives issued before 1970, the term was more restrictive in that it only applied to corrective maintenance activities, i.e., repair, adjustment, calibration, troubleshooting, or other functions.

MAY. As used in maintenance documentation, MAY denotes permission. For example: At navigational aid facilities, certain maintenance activities MAY be performed without recourse to **flight inspection**. See Order 1320.1C, FAA Directives System. (Also see Shall, Should, and Will.)

MODIFICATION. A modification to a ground facility, system, subsystem, or equipment is an alteration in its electrical, mechanical, or physical characteristics, arrangement, configuration, or use that results in a need for (a) changes to record documentation or (b) changes in existing standards and tolerances/limits or the need for establishing new standards and tolerances/limits or both. See Order 6032.1A, Modifications to Ground Facilities, Systems, and Equipment in the National Airspace System.

MONITOR. A monitor is a device designed to detect when a designated parameter has deviated beyond its prescribed tolerance/limit, and then to activate an alarm to this effect or alter the operation or both.

MONTHLY. A scheduling term, meaning once each month, and at approximately 30-day intervals.

MUST. See Shall.

NAS CHANGE PROPOSAL (NCP). The means for proposing changes to **NAS** configuration items, FAA Form 1800-2.

NAS-MD-001. The document that lists all of the **NAS** items (including hardware, software, and documentation) that are under configuration management.

NONSTANDARD SPARE PARTS. These are replaceable parts (often called parts peculiar) that are unique in characteristic or function to the degree that they are not readily obtainable from sources other than the prime contractor.

OFFICE OF PRIMARY INTEREST (OPI). The organizational element primarily affected by decisions or actions of the OPR and held accountable for proper responsiveness, coordination, and feedback, prior to assumption of OPR status in the next sequence of events, is considered the office of primary interest.

OFFICE OF PRIMARY RESPONSIBILITY (OPR). The organizational element held accountable for taking appropriate action or for making a decision between alternatives at a specific turn of events, is considered the office of primary responsibility.

OFF-THE-SHELF ITEMS. These are commercial items of equipment and test equipment that are sold in substantial quantities to the general public at established catalog or market prices.

OPERATING STOCK. This is the quantity of material stored **onsite** to meet anticipated operating requirements during the interval between replenishment actions, based on the annual demand value of each item.

OPERATING TOLERANCE/LIMIT. As used in maintenance technical directives, the operating tolerance/limit is the maximum deviation from the standard value of a parameter, or the range within which normal functioning can continue without adjustment or corrective maintenance, and beyond which remedial action by maintenance personnel is mandatory.

OTHER MAINTENANCE TASK. As used in maintenance technical directives issued in 1970 and later, an **"other maintenance task"** is any periodic scheduled task other than a performance check that is necessary to prevent deterioration or ensure reliable operation of the system, subsystem, or equipment. These tasks are not performance checks. Periodic maintenance activities now prescribed in maintenance technical directives are separated into "performance checks" and "other maintenance tasks." (Also see Performance Check.) The term is not used in maintenance technical directives issued before 1970.

OUTAGE.- The loss or unavailability of a facility/service for 1 minute or more.

PART. This is a one-piece element designed to perform a simple function in an assembly, module, component, unit, equipment, or facility.

PERFORMANCE CHECK. As used in maintenance technical directives issued in 1970 and later, a performance check is a periodic scheduled test, measurement, or observation of normal operating controls and functions, which is necessary to determine whether a system, subsystem, or equipment is operating within its established tolerances or limits (i.e., doing its job satisfactorily at a given time). Periodic maintenance activities prescribed in the later maintenance technical directives are separated into **"performance checks"** and **"other maintenance tasks."** This term is also used in maintenance technical handbooks issued before 1970, but in these handbooks it means a procedure required to evaluate the performance of a system, subsystem, or equipment rather than just the description of the activity. (Also see Other Maintenance Task.)

PERIODIC MAINTENANCE. As used in maintenance technical directives issued in 1970 and later, any scheduled preventive maintenance activities that include performance checks and/or other maintenance tasks are periodic maintenance activities.

PREVENTIVE MAINTENANCE. The routine, scheduled maintenance designed to preserve the equipment or to reduce the chance of failure. As used in **MANOP's** (Manual of Operations) and handbooks issued prior to 1970, and contractor prepared instruction books written to meet Specification **FAA-D-2494/b**, it covers all mandatory activities. Preventive maintenance may be used as a generic term discussing all kinds of tasks, including even nonscheduled tasks, the performance of which meets the general definition.

PSEUDO FACILITY/SERVICE. A pseudo facility is an activity not classified as an operating type facility, requiring the expenditure of maintenance manpower or

material resources or which has been established to capture the effectiveness of a specified aeronautical service.

QUARTERLY. A scheduling term, meaning four times each year, and at approximately 90-day intervals.

REPLACEABLE SPARE PART. This is a part interchangeable with a part being used in an equipment, but furnished separately and not required for operation except as a replacement (often called a spare part).

RESTORATION. Restoration encompasses the maintenance activities required to return a facility, system, subsystem, or equipment to normal use following a facility outage, service interruption, equipment failure, or out-of-tolerance/limit condition.

SAFETY STOCK. This is the quantity of material stored on site to meet unpredictable fluctuations in operating requirements and provide sufficient lead time to accommodate delays between ordering and receiving replenishment.

SEMIANNUALLY. A scheduling term, meaning twice each year, and at 6-month intervals.

SEMIMONTHLY. A scheduling term, meaning twice each month, and at approximately 15-day intervals. The preferred term is BIWEEKLY.

SEMIWEEKLY. A scheduling term, meaning twice each week, and at 3- or 4-day intervals. Sometimes the term "twice weekly" is used instead.

SERVICE. Service is the end product delivered to a user (Air Traffic personnel or aviation public) that results from an appropriate combination of systems, subsystems, and equipment.

SHALL. As used in maintenance documentation, SHALL denotes compulsory or mandatory action that the person being directed is 'obliged to take. For example: The equipment SHALL be adjusted to operate in accordance with directive tolerances. See Order 1320.1C. (Also see Should, Will, and May.)

SHOULD. As used in maintenance documentation, SHOULD denotes an action that is desirable but not mandatory. For example: The equipment SHOULD be shut down if, in the opinion of the technician, a failure is imminent. See Order 1320.1C. (Also see Shall, Will, and May.)

SOFTWARE. A set of programs, procedures, rules, and documentation concerned with the operation of a data processing system; for example, compilers, library routines, and manuals.

SPECIAL MAINTENANCE PROCEDURE. As used in maintenance technical handbooks issued in 1970 and later, a special maintenance procedure is the prescribed procedure for doing incidental, nonscheduled tasks. This may include repair, adjustment, calibration, alignment, and other procedures. The term was not used in maintenance technical directives issued before 1970.

SPECIALLY SELECTED STANDARD PARTS. These are replaceable parts readily available from commercial sources, which have been selected on the basis of special treatment, reliability tests, and/or high performance validation.

STANDARD. As used in maintenance technical directives, a standard is the optimum value (on which the initial and operating tolerances are based) assigned to an essential parameter of a system, subsystem, or equipment. This value is usually established by design plans and specifications.

STANDARD ALLOWANCE. This term is applicable to two categories of logistic support **items**--working equipment and test equipment. These are documented by facility type in tabular format, listing each line item by type designation or description and quantities required as officially approved to implement maintenance operations for all FAA facilities in the National Airspace System.

STANDARD SPARE PARTS. These are replaceable parts readily available from commercial sources (often called **"parts common"**).

SUBSYSTEM. A subsystem is a segment of a system that performs a particular function that is a portion of, or that contributes to, the overall system product.

SYSTEM. A system is an integrated combination of equipment or subsystems according to an engineering design in which their independent technical functions are combined to produce a particular operating entity in the overall National Airspace System.

SYSTEM COMPONENT (SYSTEM ELEMENT). This may be a major operating element, active or passive, which would affect the overall performance or characteristics of the system if removed or maladjusted.

TASK. A task is a unit of work to be performed under each activity. These tasks are identified and counted according to the maintenance handbook subparagraphs, at the lowest subparagraph.

TEMPORARY MODIFICATION. A temporary modification is a nonpermanently installed modification. The term, as used informally, is usually intended to apply to either a **"test modification"** or an ****emergency modification,"** but may **also** apply to a **"training modification."**

TEST MODIFICATION. A test modification is an experimental modification, installed in the most limited scale practical (e.g., normally on a single piece of equipment; a single channel; a single site; a single chain of sites, as in an **RML** system), for the development or evaluation of a proposed modification. See Order 6032.1A.

TRAINING MODIFICATION. A training modification is a temporary modification installed by the FAA Academy to facilitate the use of a system, subsystem, or equipment for training purposes. The modification can be readily removed in the event the system, subsystem, or equipment is placed in use in an operational environment. See Order 6032.1A.

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TRIAL MODIFICATION. A trial modification is usually synonymous with a "test modification.'" See Order 6032.1A.

TWICE WEEKLY. A scheduling term, meaning twice each week, and at 3- or 4-day intervals. Sometimes, the term ****semiweekly**** is used instead.

TWO HOURS. A scheduling term, meaning twelve times each calendar day, four times each shift or watch, and at approximately 2-hour intervals.

TYPE DESIGNATION. An FAA type designation is an assigned combination of alphanumeric characters used to identify specific production equipment, **custom-**built for the agency. The identification is also imprinted on the equipment nameplate. Examples are **FA-9996, FAA-7201, RTA-2, ASR-9.** See Order 0000.7D, Index of **FAA** Electronic Equipment Type Designations.

UTC (COORDINATED UNIVERSAL TIME). UTC is the time provided in world-wide time signal broadcasts used in aviation. It has replaced Greenwich mean time as the accepted standard clock time in many countries.

WAIVER. A waiver is written permission authorizing noncompliance with established facility/system/subsystem/equipment installation instructions, standards/tolerances/limits, maintenance procedures, or maintenance schedules contained in documents issued by various levels of agency management.

WEEKLY. A scheduling term, meaning once each week, and at 7-day intervals

WILL. As used in maintenance documentation, WILL is intended to denote action in the future tense. For example: Obsolete equipment WILL be replaced as soon as funds can be made available. See Order 1320.1C. (See also Shall and May.)

WORKING EQUIPMENT. This is a category of equipment that includes all special tools, devices, and accessories required to install, adjust, or align operating equipment in performance of maintenance operations, exclusive of test equipment. See Order 4630.2A, Standard Allowance of Supplies and Working Equipment for National Airspace System Facilities.

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Appendix 2

NOTE: The examples in this appendix contain suggested entries.

Example 1 Part 1:

Subject of the log, station, month, and year

Beginning entry for the month

Begin maintenance entry

Completion of periodic maintenance with reference to handbook (No certification parameters affected)

Arrive and depart site

Coordination with Air Traffic personnel

Routine single line certification

FACILITY MAINTENANCE LOG			STATION Eugene , Oregon	MONTH AND YEAR January, 1990	
			SUBJECT OF LOG EUG ASR		
DATE	TIME (24 HOURS)	CODE	REMARKS	INI- TIALS	
			January 1990		
2	1800		Arrived Site. Channel B in operation. Requested ATC release Channel A for		
			maintenance.	SM	
	1805		ATCT(PD) released Channel A for maintenance. Begin maintenance.	SM	
	1920		Channel A returned to service. Requested Channel change.	SM	
	1925		ATCT(PD) changed channels. Channel A in operation.	SM	
	1928		Requested Channel B for maintenance. Channel B released ATCT(PD).	SM	
	2115		Completed Weekly and Monthly maintenance on Channel A and B IAW		
			63 10.9A para. 150 a and b. Channel B returned to service. ATCT(PD) advised.	SM	
	2130	51	ASR T/R Certified	SM	
2	2140		Departed Site Channel A in operation.	SM	

Example 1 Part 2:

Inclusive certification entry (RCO)

Non-Sector coordination entry

14	1623	51	Local Receivers 121.5, 123.6, and 122.2 Mhz main and standby certified.	JS	
15	2015		Washoe County Deputy Sherriff (Scott) reported small boys shooting at RNO		
			RCO obstruction lights.	JS	
DATE		SIGNATURE OF SECTOR MANAGER/DESIGNEE		DATE	SIGNATURE OF MAINTENANCE TECHNICIAN

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Example 2:

Subject of the log, station, month, and year (Sector established log)
Beginning entry for the month
Begin maintenance entry
Completion of periodic maintenance with reference to handbook
Arrive and depart site
Coordination with Airway Facility MCC at Air Traffic Control Center

FACILITY MAINTENANCE LOG			STATION Talkeetna, Alaska		MONTH AND YEAR June, 1989	
			SUBJECT OF LOG TKA RCAG E/G			
DATE	TIME (24 HOURS)	CODE	REMARKS			INITIALS
04	2123		Departed Site			JM
			July 1989			
07	1833		Arrived site, began maintenance.			JM
	1903		Coordinated with MCC (HG) for E/G facility load test at 1915.			JM
	1907		Started E/G on "NO LOAD TEST".			JM
	1915		Transferred facility load to E/G.			JM
	2017		Transferred facility load back to commercial power, MCC (HG) advised.			JM
	2230		Completed monthly maintenance per order 6980.11B para. 201 and 205.			JM
	2239		Departed site.			JM
DATE		SIGNATURE OF SECTOR MANAGER/DESIGNEE		DATE		SIGNATURE OF MAINTENANCE TECHNICIAN

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Appendix 2**Example 3:**

Subject of the log, station, month, and year
 Beginning entry for the month with change of month in remarks
 Partial PM entry with reference to maintenance order
 Coordination with Air Traffic
 Partial certification (Entry prior to return to service of facility)

FACILITY MAINTENANCE LOG			STATION Anchorage, Alaska		MONTH AND YEAR March, 1989
			SUBJECT OF LOG ANC LOC		
DATE	TIME (24 HOURS)	CODE	REMARKS		INI- TIALS
31	2425		Departed site.		WW
			April 1989		
4	1800		Arrived site. No alarms or transfers noted #1 equipment main.		WW
	/1805	60	Received final approval for scheduled shutdown of localizer, MCC (JT) and		
			ATCT (RF) coordinated.		WW
	1810		Began maintenance.		WW
	2205		Completed Weekly, Monthly, and Quarterly maintenance on #1 equipment IAW		
			6750.49 para. 4250 b, c, and d. Completed Monthly maintenance #2 equipment		
			IAW 6750.49 para 4250 c. Failure of transmitter module 1A21 prevented com-		
			pletion of Weekly and Quarterly maintenance on #2 equipment. Transmitter		
			module ordered P-1.		WW
	2215	51	Localizer Certified except for #2 equipment.		WW
4	2220/		Localizer returned to service. ATCT (RF) coordinated and advised, #2 equip-		
			ment remains OTS. #1 equipment main.		WW
DATE		SIGNATURE OF SECTOR MANAGER/DESIGNEE		D A T E	SIGNATURE OF MAINTENANCE TECHNICIAN

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Example 4:

Log covers (Consolidated facilities are listed in the subsidiary blocks)

a. Standard Log For A Single Facility

FACILITY MAINTENANCE LOG	
STATION Bethel , Alaska	SUBJECT OF LOG BET MM
FROM October31, 1989	m
SUBSIDIARY LOGS (IF APPLICABLE)	

c. Log Cover With Consolidated And Control Facilities

FACILITY MAINTENANCE LOG	
STATION Anchorage, Alaska	SUBJECT OF LOG ANC ATCT
FROM November 1, 1989	m
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	(Controlled)
ANC RCLT	ANC B RTR
ANC ASI	ANC A RTR
ANC ICSS	LHD RTR
ANC ATIS	
ANC MCR	

b. Standard Log For A Single Facility
(Note: Locally Required Log)

FACILITY MAINTENANCE LOG	
STATION Talkeetna, Alaska	SUBJECT OF LOG TKA RCAG E/G
FROM April1, 1989	m
SUBSIDIARY LOGS (IF APPLICABLE)	

d. Consolidated Log Cover

FACILITY MAINTENANCE LOG	
STATION Anchorage, Alaska	SUBJECT OF LOG ANC MALSR
FROM November12, 1989	TO
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	
ANC A VASI	
ANC B VASI	
ANC VASI	

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Example 5:

Consolidated log covers (Consolidated facilities are listed in the subsidiary blocks)

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Appendix 2

a. Consolidated Log Cover from VOR Site

FACILITY MAINTENANCE LOG	
STATION Quinhagak, Alaska	SUBJECT OF LOG AQH VOR
FROM October 5, 1989	TO
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	
AQH TACR	AQH RCO

c. Consolidated Log Cover ATCT

FACILITY MAINTENANCE LOG	
STATION Reno, Nevada	SUBJECT OF LOG RNO ATCT
FROM 9/5/89	TO
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	
RNO ASI	RNO ATIS
RNO Z RTR	RNO TCSS
RNO TMLT	RNO MCR

b. Consolidated Log Cover
RMM Facility

FACILITY MAINTENANCE LOG	
STATION Merrill Field, Alaska	SUBJECT OF LOG MRI RMCF
FROM 12/09/89	TO
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	
ANC VOR	TKA VOR
ANC DME	TKA DME
BGQ VOR	GKN VOR
BGQ VOR	GKN TACR

d. Consolidated Log Cover
RVR SITES

FACILITY MAINTENANCE LOG	
STATION Anchorage, Alaska	SUBJECT OF LOG ANC RVR
FROM 2/25/89	TO
SUBSIDIARY LOGS (IF APPLICABLE)	
(Consolidated)	
ANC A RVR	
ANC B RVR	

Example 6 :

Onsite overview with page break entry
 Routine maintenance with handbook reference (Quarterly visits)
 Coordination with Air Traffic for outages and monitoring
 Outage for maintenance which is less than 1 minute

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FACILITY MAINTENANCE LOG			STATION Bethel, Alaska	MONTH AND YEAR January, 1989
			SUBJECT OF LOG BET MM	
DATE	TIME (24 HOURS)	CODE	REMARKS	INI- TIALS
			January 1989	
05	1808		Arrived site.	FC
	1810		Assumed Monitor ATCT (BF). Began routine maintenance.	FC
	/1830/	60	Coordinated automatic transfer / shutdown check with ATCT (BF)	FC
	1840		Completed Quarterly maintenance IAW 6750.49 para 4700 b.	FC
	1845	51	MM Certified.	FC
	1855		Returned monitor to ATCT (BF). Departed Site	FC
			April 1989	
07	2105		Arrived site.	FC
	2110		Assumed Monitor ATCT (QT). Began routine maintenance.	FC
	/2130/	60	Coordinated automatic transfer / shutdown check with ATCT (QT)	FC
	2140		Completed Quarterly maintenance IAW 6750.49 para 4700 b.	FC
	2145	51	MM Certified.	FC
	2155		Returned monitor to ATCT (RS).	FC
	2158		Departed Site.	FC
			June 1989	
28	1700		Arrived site.	WW
28	1837		Reviewed logs for the period November 1, 1988 at 1500z through June 28, 1989	
			to 1700z. Departed site. Last Entry this page.	WW
DATE 6/28/89	SIGNATURE OF SECTOR MANAGER/DESIGNEE Wilson Williams		DATE 6/28/89	SIGNATURE OF MAINTENANCE TECHNICIAN Wilson Williams

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Example 7 Part 1:

Subject of the log, station, month, and year

Keyed log entry to previous log book. (First sheet of new log book)

Delayed entry format (Outages or service interruptions only)

Code 68:Related outage (DME colocated: identification for DME is supplied by localizer.)

Entry for events in the past (i.e. Maintenance in past, omitted entries etc.)

F-6047101

FACILITY MAINTENANCE LOG			STATION Washington, D. C.	
			SUBJECT OF LOG ASO DME	
			MONTH AND YEAR March, 1989	
DATE	TIME (24 HOURS)	CODE	REMARKS	INI- TIALS
12	0215		Log continued from F-6040050.	JR
10	/1300	68	(Delayed entry; 3/12, 0220) DME OTS for system flight check see localizer log.	JR
11	0203/		(Delayed entry; 3/12, 0225) DME RTS.	JR
12	0420		On 2/15 at 0400, a safety inspection of the ASO DME was conducted by region-	
			al office safety inspector John Smithe. Entry was omitted due to error by safety	
			inspector. See Localizer log on 2/15 at 0345	JS

EXAMPLE 7. PART 2:

Last sheet of facility log keyed to first sheet of following log.

Optional (Keying the log pages to the next log may also be placed in the lower right margin of the last log page.)

F-6040050

11	2345		ATCT (QT) Transferred equipment to #2 main.		JR
	2350	51	DME Certified.		JR
12	0015		Last entry this log book see page F-6047101.		JR
DATE		SIGNATURE OF SECTOR MANAGER/DESIGNEE		DATE	SIGNATURE OF MAINTENANCE TECHNICIAN

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(Last entry this log book see page F-6047101) JR

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Example 8 :

Consolidated log with control facilities (Log cover is shown in appendix 2, example 4, view c.)

Error correction by person making error.

Error correction: other than person making entry

FACILITY MAINTENANCE LOG			STATION Anchorage, Alaska	MONTH AND YEAR June 1989
DATE	TIME (24 HOURS)	CODE	SUBJECT OF LOG ANC ATCT	INITIALS
07	1655		ANC ATIS - Completed Monthly and Quarterly maintenance on ATIS IAW	
			6550.2A para 54 a and b.	BF
	1710	51	ANC ATIS - ATIS Certified.	BF
	1712/		ANC ATIS - ANC ATIS RTS ATCT (RH)	BF
	1805		ANC ATCT - ATCT (RH) reported FM radio interference on frequency 118.9	
			Mhz.	BF
	1910		LHD RTR-Changed to standby channel checked 118.7 118.9 Mhz incoming	
			audio, still found FM radio station KRAZ breaking in on audio intermittently.	
			Departing site to check equipment at LHD RTR.	BF
	1945		ANC MCR - Advised ATCT (RH) working on MCR transport #2. Begin Main-	
			tenance.	SW
	1950		ANC MCR - Coordinated transfer to #1 transport with ATCT (RH).	SW
	1955		ANC MCR - Completed multichannel recorder checks IAW 6670.4B para. 44 a.	
			Advised ATCT (RH) checks completed. #2 equipment left main.	SW
	2030		ANC ASI - Began maintenance.	SW
	2040		ANC ASI - Completed Quarterly maintenance IAW 6560.13A para. 103.	SW
	2042	51	ANC ASI - DASI Certified.	SW
	2050		ANC ATCT - Frequency 118.9 logged OTS. Radio Frequency Interference is	
			causing "breakup" of audio. (BF) at site working on problem.	SW
08	1800		ANC MCR - 1950 entry on June 07, 1989 is in error. The equipment transfer	
			was made to the # 2 transport.	WW
DATE		SIGNATURE OF SECTOR MANAGER/DESIGNEE		SIGNATURE OF MAINTENANCE TECHNICIAN

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Appendix 2

Example 9:

(See log cover appendix 2: example 4, view d.)
Subject of the log, station, month, and year
Beginning entry for the month
Begin maintenance entry
Reduced service entry (Use of outage code without slash bar)
Coordination with Air Traffic personnel
Arrive and depart site entries (Do not require preface)

FACILITY MAINTENANCE LOG			STATION	MONTH AND YEAR
			ANCHORAGE, ALASKA	
			SUBJECT OF LOG	
			ANC MALSR	October . 1989
DATE	TIME (24 HOURS)	CODE	REMARKS	INI- TIALS
			October 1989	
17	1410		Arrived site, began maintenance.	SM
	1425	80	ANC MALSR - Reduced service SFL portion OTS due to failure of sequencer	
			switch ATCT (QT) advised.	SM
	1430		ANC MALSR - Contacted material specialist (RF) will order sequencer switch	
			priority 2.	SM
	1435		Departed site.	SM

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Example 10:

Aircraft accident with page break entry
Sector Manager signature added on white pages after the event

FACILITY MAINTENANCE LOG			STATION Dry Prong, Louisiana	MONTH AND YEAR January, 1989				
DATE	TIME (24 HOURS)	CODE	REMARKS	INITIALS				
			January 1989					
05	2045		Arrived site. Was notified by supervisor (LK) at 2030 of aircraft accident involving Bonanza N41311 that occurred at 2010 this date and that we must evaluate the DFG ASR. ATCT (RD) advised that channel A has been in continuous use before, during, and since the time of the accident.	WW/JG				
	2055		Began evaluation of channel A.	WW/JG				
	2115		Requested channel change. ATC (RD) complied.	WW/JG				
	2137		The operation of the DPG ASR was checked beginning at 2055 this date and found to be normal. Meter readings and certification performance parameters were within established standards and tolerances and certified. I certify that this is a true and complete statement of my findings with regard to the DPG ASR for the date and time indicated. The DPG ASR is certified.	WW				
			Technician: <i>Wilson Williams</i>					
			SIGNATURE					
			<i>Electronics Technician</i>					
			TITLE					
			Observer: <i>John Grey</i>					
			4					
			<i>Electronics Technician</i>					
			TITLE					
	2210	51	ASR T/R Certified.	WW				
05	2215		Departed site. Channel B up. Last entry this page	WW/JG				
<table border="1"> <tr> <td>DATE 1/28/89</td> <td>SIGNATURE OF SECTOR MANAGER/DESIGNEE <i>W. A. Genius</i></td> <td>DATE 1/05/89</td> <td>SIGNATURE OF MAINTENANCE TECHNICIAN <i>Wilson Williams</i></td> </tr> </table>					DATE 1/28/89	SIGNATURE OF SECTOR MANAGER/DESIGNEE <i>W. A. Genius</i>	DATE 1/05/89	SIGNATURE OF MAINTENANCE TECHNICIAN <i>Wilson Williams</i>
DATE 1/28/89	SIGNATURE OF SECTOR MANAGER/DESIGNEE <i>W. A. Genius</i>	DATE 1/05/89	SIGNATURE OF MAINTENANCE TECHNICIAN <i>Wilson Williams</i>					

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APPENDIX 3. SYSTEMS, SERVICES, AND EQUIPMENT REQUIRING CERTIFICATION

The following equipment and services shall be certified in accordance with chapter 5, section 4. Specific guidance concerning certification requirements related to intervals, persons responsible, prescribed statements for facility maintenance logs, and other needed information may be found in the latest revision of the referenced technical handbooks.

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
1. <u>Primary Radars.</u>		
a. RADARS (En Route).		
(1) ARSR Overall	SER	6340.
(2) ARSR-60 Overall	SER	6340.19
(3) ARSR-1/2	SYS	6340.8
(4) ARSR-3	SYS	6340.13
(5) ARSR-60	SYS	6340.19
(6) FPS-20	SYS	6340.6
(7) ARSR-1/2 with SSR-DMTI	SYS/SER	6340.21
(8) FPS-20 with SSR-DMTI	SYS/SER	6340.22
b. RADARS (Terminal).		
(1) ASR Overall	SER	6310.9
(2) ASR Overall	SER	6310.10
(3) ASR-4/5/6	SYS	6310.10
(4) ASR-7/8	SYS	6310.9
(5) ASR-9	SYS/SER	6310.X
(6) TDWR	SYS/SER	6310.X
2. <u>RADARS</u> (Secondary, En Route, and Terminal).		
a. ATCBI Overall	SYS	6360.1
b. ATCBI Decoder	SYS/SER	6360.1
c. ATCBI-3/4	SYS	6360.1
d. ATCBI-5	SYS/SER	6360.14
e. ATCBI-5 with RMS	SYS/SER	6360.X
f. DECODER (BEACON)	SER	6360.14

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
3. <u>ASDE.</u>		
a. ASDE Overall	SER	6330.3
b. ASDE	SYS	6330.3
c. ASDE Display	SYS	6330.3
d. ASDE-3	SYS/SER	6330.X
4. <u>RADAR Digitizers.</u>		
a. CD-1	SYS	6350.8
b. CD-2	SYS	6350.21
c. SRAP (Sensor RCVR/Processor, ARTS III)	SYS	6190.6
5. <u>Automated Processors.</u>		
a. En Route.		
(1) EARTS	SER	6190.6
(2) CODAP (Composite Oceanic Display and Planning)	SER	6100.X
(3) CFAD (Composite Flight Data Processing)	SER	6100.1 .
(4) COFAD (Composite Offshore Flight Data)	SER	6100.X
(5) CRAD (Composite Radar Data Process.)	SER	6100.1
(6) DRAD (DARC Radar Data Processing)	SER	6100.1
(7) ERDP (En Route Radar Data Process, EARTS)	SER	6190.6
(8) ATCC (Air Traffic Control Computer)	SYS	6100.1
(9) CCCH (Central Computer Complex, HOST)	SYS	6100.1
(10) DARC (Direct Access Radar Channel)	SYS	6100.1
(11) CDC (Computer Display Channel)	SYS	6100.1
(12) DCC (Display Channel Complex)	SYS	6100.1
(13) DPS (Data Processing System, EARTS)	SYS	6190.6
(14) RDED	SYS	6100.1
(15) RDED (Backup)	SYS	6100.1
(16) CFC (Central Flow Control)	SER	6110.X
(17) TMCC (Traffic Management Computer Complex)	SYS	6110.X

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
b. Terminal.		
(1) CENRAP (AT Center Radar ARTS Processing)	SER	61XX.X
(2) TRDP (Term RADAR Data Processing, ARTS II)	SER	6190.5
(3) TRDP (Term RADAR Data Processing, ARTS III)	SER	6190.6
(4) ARTS II/IIA (Automated Radar Terminal)	SYS	6190.5
(5) ARTS IIIA	SYS	6190.6
(6) ARTS IIIIE	SYS	6190.6
(7) DAS (Data Acquisition SYS, ARTS III)	SYS	6190.6
(8) DPS (Data Processing SYS, ARTS III)	SYS	6190.6
(9) TPX-42 (Decoder Processing)	SYS/SER	6360.9
6. <u>Display Systems.</u>		
a. ASDE Display	SYS	6330.3
b. ASR Display	SYS	6310.2
c. BANS (BRITE Alpha/Numeric, ARTS III)	SYS	6190.6
d. BRITE	SYS	6410.10
e. BRITE Display (REMOTE)	SYS	6410.10
f. CDC PVD TV (ATC CONT)	SYS	6410.11
g. CDC PVD TV (RBDE, ATC CONT)	SYS	6410.12
h. CDC PVD TV (RBDE-4, ATC ADVIS)	SYS	6410.13
i. DBRITE	SYS	6410.XX
j. DBRITE (Remote)	SYS	6410.XX
k. DEDS (Data Entry/Display, ARTS III)	SYS	6190.6
l. RBDE-3	SYS	6410.11
m. RBDE-4	SYS	6410.13
n. RBDE-5/5A/6	SYS	6410.12
o. RTADS (Remote TWR ALPH/NUM DIS, ARTS III)	SYS/SER	6190.6
p. TCDD (Tower Cab Digital Disp., ARTS III)	SYS	6190.6
q. TPX-42 Display	SYS	6360.9
r. FDAD	SYS	6190.6
7. <u>Electronic Navigational Aids.</u>		
a. ILS	SER	6750.49
b. GS	SUB/SER	6750.49
c. LOCALIZER	SUB/SYS	6750.49
d. NDB; H, HH, LMM, LOM	SYS	6740.2

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
e. 75 MHZ MARKER (OM, MM, IM, FM)	SYS	6750.49
f. 75 MHZ MARKER (Not Associated with an ILS)	SYS	6770.2
g. DF/DFI	SYS	6530.3
h. DME	SYS	6730.2
i. LORAN-C	SYS	6860.2
j. TACAN/TACR/DME/DMER	SYS/SYS	6820.7
k. VOR (Conventional)	SER/SYS	6820.7
l. VOR (Solid State)	SYS	6790.4
m. VOR (Tube, Hybrid)	SYS	6790.4
n. VORTAC (Second Generation)	SYS	6820.7
o. VOT (VHF Omni Range Test)	SYS	6810.1
8. <u>Lighted Navigational Aids.</u>		
a. ALSF-1, ALSF-2, MALS/MALSF/MALSR,	SYS	6850.5
b. ODALS/LDIN, SALS/SSALS/SSALF/SSALR	SYS	6850.5
c. VASI, PAPI	SYS	6850.5
9. <u>Communications.</u>		
a. BUEC	SUB/SYS	6500.9
b. EMERG Voice/Comm Transceiver	SYS	6600.21
c. MCR	SYS	6670.4
d. RMLT	SER	6350.15
e. En Route A/G Communications.		
(1) Overall A/G Comm Channel Services	SER	6470.29
(2) Control Facility Systems	SUB/SYS	6470.29
(3) Overall A/G Comm TRANS/RCVR (LOCAL)	SUB/SYS	6470.29
(4) A/G COMM TRANSMITTER (LOCAL)	SUB/SYS	6470.29
(5) A/G COMM RECEIVER (LOCAL)	SUB/SYS	6470.29
(6) OVERALL A/G COMM TRANS/RCVR (REMOTED)	SUB/SYS	6470.29
(7) A/G COMM TRANSMITTER (REMOTED)	SUB/SYS	6470.29
(8) A/G COMM RECEIVER (REMOTED)	SUB/SYS	6470.29
f. Flight Service Station A/G Communications.		
(1) OVERALL A/G COMM CHANNEL SERVICES	SER	6490.1
(2) CONTROL FACILITY SYSTEMS	SUB/SYS	6490.1
(3) OVERALL A/G COMM TRANS/RCVR (LOCAL)	SUB/SYS	6490.1

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
(4) A/G COMM TRANSMITTER (LOCAL)	SUB/SYS	6490.1
(5) A/G COMM RECEIVER (LOCAL)	SUB/SYS	6490.1
(6) OVERALL A/G COMM TRANS/RCVR (REMOTED)	SUB/SYS	6490.1
(7) A/G COMM TRANSMITTER (REMOTED)	SUB/SYS	6490.1
(8) A/G COMM RECEIVER (REMOTED)	SUB/SYS	6490.1
g. Automated Flight Service Station A/G Communications.		
(1) OVERALL A/G COMM CHANNEL SERVICES	SER	6490.17
(2) CONTROL FACILITY SYSTEMS	SUB/SYS	6490.17
(3) OVERALL A/G COMM TRANS/RCVR (LOCAL)	SUB/SYS	6490.17
(4) A/G COMM TRANSMITTER (LOCAL)	SUB/SYS	6490.17
(5) A/G COMM RECEIVER (LOCAL)	SUB/SYS	6490.17
(6) OVERALL A/G COMM TRANS/RCVR (REMOTED)	SUB/SYS	6490.17
(7) A/G COMM TRANSMITTER (REMOTED)	SUB/SYS	6490.17
(8) A/G COMM RECEIVER (REMOTED)	SUB/SYS	6490.17
h. Terminal A/G Communications.		
(1) OVERALL A/G COMM CHANNEL SERVICES	SER	6480.6
(2) CONTROL FACILITY SYSTEMS	SYS	6480.6
(3) OVERALL A/G COMM TRANS.RCVR (LOCAL)	SUB/SYS	6480.6
(4) A/G COMM TRANSMITTER (LOCAL)	SUB/SYS	6480.6
(5) A/G COMM RECEIVER (LOCAL)	SUB/SYS	6480.6
(6) OVERALL A/G COMM TRANS/RCVR (REMOTED)	SUB/SYS	6480.6
(7) A/G COMM TRANSMITTER (REMOTED)	SUB/SYS	6480.6
(8) A/G COMM RECEIVER (REMOTED)	SUB/SYS	6480.6
10. <u>Terminal, Weather.</u>		
a. ASI, DASI	SYS	6560.13
b. ATIS	SYS	6550.2
c. RBC	SYS	6560.13
d. LLWAS	SYS	6560.13
e. RRH	SYS	6560.13
f. RVR	SYS	6560.8
g. TWEB	SYS	6550.2
h. Wind Measurement Equipment	SYS	6560.13

	CERTIFICATION TYPE	MAINTENANCE TECHNICAL HANDBOOK REFERENCE
11. <u>Power Conditioning Systems.</u>		
a. PCS'S Equal to or Greater Than 80 kw and Providing Continuous Conditioned Power.	SYS	6470.5

APPENDIX 4. FACILITIES NOT REQUIRING MANUAL MAINTENANCE LOGS

The following listed facilities are not required to be the subject of a manual log:

AID	ELD	MDS	TIPS
ATCC	EOF	MX	TR
ATRAM	FAC	NRCS	TTS
AWIS	FLD	OAW	UB
CBI	FOTS	OFFRD	VEHS
CKT	GDL	OLD	WSM
CLM	HDQ (SERIES)	QS	
CTS	HEAT	SAL	
CUE	HELI	SAN	
CNS	LABS	SB	
DRG	LIVQ	SPS	
DTE (pc's for admin. use)	MAREQ	SWG	
	MCT	TELEX	
		TIM	

Additionally:

An **ATEM** will not require a log unless the facility is used to capture additional facility workload.

A PCS will not require a log unless it is equal to or greater than 80 kilowatts and provides continuous conditioned power.

A **RMLR** consisting solely of a passive reflector will not require a log.

APPENDIX 5. LIST OF RELATED PUBLICATIONS

The following publications provide guidance to Airway Facilities personnel for use in the performance of their maintenance technical duties. Except for the AT directives, these documents have been distributed to sector level and should be available there for general reference and use. The AT directives are available at the local Air Traffic facility.

1. 0000.7D, Index of FAA Electronic Equipment Type Designations.
2. 1050.10A, Prevention, Control, and Abatement of Environmental Pollution at FAA Facilities.
3. 1050.14, Polychlorinated Biphenyls in the National Airspace System.
4. 1280.1, Protecting Privacy of Information About Individuals.
5. 1320.1C, FAA Directives System.
6. 1320.33B, Equipment Modification and Facility Instruction Directives.
7. 1320.35A, Preparation of Airway Facilities Service Maintenance Handbooks.
8. 1350.15B, Records Organization, Transfer, and Destruction Standards.
9. 1375.4A, Standard Data Elements and Codes-Facility Identification and Supplemental Standards.
10. 1380.40B, Airway Facilities Sector Level Staffing System.
11. 1600.2C, National Security Information.
12. 1600.6B, Protection of Agency Property.
13. 1600.54B, FAA Automated Information Systems Security Handbook.
14. 1720.18B, FAA Distribution System.
15. 1720.30B, Distribution of Systems Maintenance Service Technical Directives Affecting Airway Facilities.
16. 1800.8E, National Airspace System Configuration Management.
17. 3400.3E, Airway Facilities Maintenance Personnel Certification Program.
18. 3600.6, Workweeks and Hours of Duty.
19. 3900.6A, Occupational Safety Program for Airway Facilities Personnel.
20. 3900.14C, Safety Climbing Equipment at Existing National Airspace System (NAS) Facilities.

21. 3900.19A, Occupational Safety-and Health.
22. 3900.23, Report of Airway Facilities Occupational Safety Program.
23. 3900.24A, Accident and Fire Reporting.
24. 3900.27, Handling and Disposal of Cathode Ray Tubes.
25. 3900.28A, Safety Alert--Aircraft Jet Blast Hazard.
26. 3910.3A, Radiation Health Hazard and Protection.
27. 4250.9A, Field Inventory Management and Replenishment Handbook.
28. 4620.1, Scheduled Overhaul of Ground Facilities Equipment.
29. 4620.3C, Initial Support for New or Modified Equipment Installation.
30. 4620.4A, Standards for Office Furniture and Equipment.
31. 4630.2A, Standard Allowance of Supplies and Working Equipment for National Airspace System Facilities.
32. 4650.12B, Local Purchase.
33. 4650.20A, Reporting and Replacement of Items Failing Under Warranty.
34. 4670.2B, Motor Vehicle Management.
35. 6000.1A, Certification and Operation of Military-Maintained Navigation Facilities in the National Airspace System.
36. 6000.5B, Facilities Master File.
37. 6000.6, United States Interagency Ground Inspection Manual for Air Traffic Control and Navigational Aid Facilities.
38. 6000.18, Field Repair of Equipment.
39. 6000.20B, Waiver of Criteria for Establishment and Maintenance of Airway Facilities.
40. 6000.22, Maintenance of Two-Point Private Lines.
41. OA 6030.5, Service Availability of Commissioned Facilities of the National Airspace System.
42. 6030.18B, Mobile Air Traffic Control, Navigational Aid, Communication, and Power System.
43. 6030.31D, Restoration of Operational Facilities.

44. 6030.43, Maintenance Automated Reporting System.
45. 6030.45, Facility Reference Data File.
46. 6031.1A, FAA Depot Servicing Levels for Ground Equipment.
47. 6032.1A, Modifications to Ground Facilities, Systems, and Equipment in the National Airspace System.
48. 6040.6C, Airway Facilities Technical Inspection Program.
49. 6040.15B, National Airspace Performance Reporting System.
50. 6200.4D, Test Equipment Management Handbook.
51. AF 6430.49, Ground Rules for Aid Defense Command and CAA Joint Use of Radar Facilities.
52. 6700.16, Maintenance of Mobile VHF Omnirange (VOR) Facilities.
53. 7110.10I, Flight Services.
54. 7110.65F, Air Traffic Control.
55. 7210.3I, Facility Operations and Administration.
56. 7340 .1L, Contractions.
57. 7610.4H, Special Military Operations.
58. 7930.2C, Notices to Airmen (NOTAMS).
59. 8020.11, Aircraft Accidents and Incidents-Notification, Investigation and Reporting.
60. OA P 8200.1, United States Standard Flight Inspection Manual.
61. Maintenance Technical Handbooks.
62. Equipment Instruction Books.
63. Electronic/Plant Equipment Modifications.
64. Safety Alert Directives.

APPENDIX 6. FAA FORMS

The following FAA Forms are referenced in this Order 6000.15B.

<u>Form #</u>	<u>Title</u>	<u>NSN</u>	<u>Unit of Issue</u>
1800-2	NAS Change Proposal	0052-00-801-6003	SH
4650-10	Warranty Failure Report	0052-00-030-5003	PD
6000-3	Airway Facilities Criteria Waiver Request	0052-00-672-3002	SH
6000-8	Technical Performance Record	0052-00-686-0001	PD
6030-1	Facility Maintenance Log	0052-00-028-5001	PD
6032-1	Airway Facilities Modification Record	0052-00-620-1001	SH
6040-3	Facility and Service Outage Report	0052-00-687-4001	PD
6040-4	Equipment Failure Report	0052-00-697-9000	PD
6040-7	Line Performance Report	0052-00-811-4000	PD
7230-4	Daily Record of Facility Operation	0052-00-024-5001	SH



U.S. Department
of Transportation
Federal Aviation
Administration

Memorandum

Subject INFORMATION: Suggested improvements to
Order 6000.15B, General Maintenance
Handbook for Airway Facilities

Date:

From: _____
Signature and Title

Reply to
Attn. of: _____
Facility Identifier
AF Address

To: Manager, Maintenance Engineering
Division, ASM-100

Problems with **present** handbook.

Recommended improvements.

